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ROAD MAP

Still in original condition, this is the first road-going MV Agusta 4-cylinder ever built. P. 50



ADIL JAL DARUKHANAWALA

FEATURES

12 GILERA RONDINE

The championship-winning 1939 Rondine, the world's first 4-cylinder Superbike.

16 1985 HONDA NIGHTHAWK 650

Bombproof, easy to ride and worth a look.

22 NORTON ELECTRA

Found in a field, now restored to perfection by readers Ian and Craig Easton.

30 1913 ARIEL: EXHUMED

In the mountains of British Columbia, Jim Green found pieces of an Ariel, which led to lots of digging, researching and eventual re-assembly.

36 THE VERY FIRST DUCATI 350

Built in California by racer Frank Scurria, the bike began life as a Ducati 175 single in a 125 F3 frame.

42 REVIVED: VAN VEEN OCR 1000

The Wankel-rotary-powered Van Veen is just as wild today as it was when it debuted in the 1970s.

50 1967 MV AGUSTA 600

The very first example of the very first road-going MV Agusta 4-cylinder, original and unrestored.

58 1957 TRIUMPH PROTOTYPE

Definitely a missed opportunity, this 200cc 2-stroke twin lives on thanks to Sammy Miller.

64 CLASSIC SCENE: BARBER 2017

Celebrating 50 years of the Norton Commando.

66 THE LONGEST HOUR

John L. Stein and Randy Pobst buy a pair of Rickman dirt bikes at the Barber swap meet, fix them, then race them the same weekend.

DEPARTMENTS

4 BLACK SIDE DOWN

The editor speaks.

6 READERS AND RIDERS

Remembering early Kawasakis.

8 UNDER THE RADAR

1978-1983 Moto Morini 500 Sport.

10 SIDECAR

2018 Las Vegas motorcycle auctions and more.

74 MC HOW-TO

We overhaul the starter on a 1970 Honda CB450K4.

82 KEITH'S GARAGE

Keith's fixes will keep your vintage bike up and running.

84 TEST RIDE

A long-term test of the Aerostich Cousin Jeremy jacket, and a review of the Tirox 360° Chain Brush.

86 DESTINATIONS

Visit The Owen Vintage Motorcycle Collection in Walnut, California.

88 COOL FINDS

New stuff for old bikes.

96 PARTING SHOTS

King of the World Kenny Roberts and his 500cc class win, way back in 1978.

ON THE WEB!

Fun in the shop

We've bragged about our Skat Cat 40 blast cabinet before, waxing enthusiastically about how easy it makes stripping painted or rusty parts back to bare metal. And while we originally expected to use it exclusively on motorcycle bits, it's turned into our go-to piece of equipment for stripping just about anything, including a *tres* ugly painted bicycle handlebar stem. Once stripped, it was an easy job on the polishing wheel to get the stem back to a natural aluminum luster. Too cool. Go to MotorcycleClassics.com/stem to see more.



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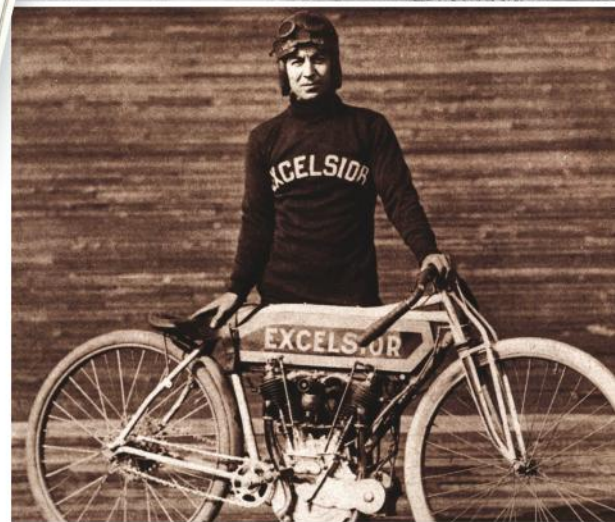
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Ahead to the past

When Heinrich and Wilhelm Hildebrand teamed up with Alois Wolfmüller to produce the world's first production motorcycle, in 1894, they were building a machine targeted almost exclusively to a growing leisure class, a population of individuals with the time and resources to toy with emerging technology.

It's doubtful they could have imagined how profound the motorcycle's impact on society and culture would be. Although the motorcycle's historically recreational status in the U.S. has limited its influence here somewhat, in other countries the motorcycle offered — and still offers — an unparalleled opportunity for personal transportation. Motorcycle sales may be slow here, but elsewhere, particularly in India and Asia, motorcycle sales are exploding.

In the U.S., increasing motorcycle sales closely followed our rise as the chief international and economic power after World War II. Twenty years later, we saw a real sales explosion following the rise in Japanese manufacturing capacity and competence that led to Japanese domination of the American market.

Yet the motorcycle in America remained at its core a recreational purchase, and often a seemingly offhand one as small Japanese and European motorcycles became available at places like Sears and Montgomery Ward, enticing customers who otherwise might have been shopping for a new lawn mower.

Changing technologies and consumer tastes led to larger and more powerful motorcycles, which increasingly elbowed smaller offerings off the showroom floor. Until recently, that evolution seemed set to continue unabated, as a growing category of ironically heavy and huge "Adventure Bikes" stormed showrooms. Then a surprise came in the fashion of a new generation of small, user-friendly two-wheelers, led by a handful of 125cc to 250cc Honda-clone-powered Asian singles. Japan's Big Four jumped in, each offering their own take on how to make small fun again, in the process creating a ripple effect that has produced a bevy of really cool mid-size machines, a category that seemed to have mostly died after the Seventies.

Along the way, old has once again become cool. Manufacturers across the globe are digging into their corporate past, pulling styling and lifestyle cues from the bikes of yore to satisfy the changing tastes of a changing universe of riders. And if they don't have a past, they're buying it. Indian manufacturing giant Mahindra bought the BSA name and plans to build a BSA-badged single. At the EICMA 2017 show in Italy, now Chinese-owned and produced Benelli introduced the single-cylinder retro-cued 400cc Benelli Imperiale. Due for production in 2018, it looks more British than Italian, which makes a certain odd sense when you learn it's aimed at the growing leisure market in India, where British thumpers of old are revered.

Royal Enfield is arguably the leading figure in the retro-themed category, a reality of ironic proportions given they were pretty much forced into that corner as they continued building the same vintage motorcycles for decades. Yet RE has evolved markedly in the past 10 years, adapting to a changing market and introducing improvements and new models, most notably at EICMA, where RE took the wraps off its first-ever twin, the 650cc Interceptor and Continental GT. New it may be, but RE's retro roots dictated its design, down to a single-overhead cam engine designed to look like a traditional pushrod mill.

As EICMA underscored, manufacturers keep looking forward, but with an eye on the rearview mirror. Like good friend Eligio Arturi said after visiting EICMA, Ahead to the Past!

Richard Backus
Editor-in-chief



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Enjoying the authors

It seems like every issue outdoes the previous and the September/October 2017 issue is another example. Each page turned brought me to another topic of interest. I have every copy of *Motorcycle Collector Magazine*, published by Don Emde, beginning with the premier October/November 1992 issue and ending with the October/November 1994 issue. I met Don at the Radnor Hunt show in Pennsylvania a few years ago when my 1968 Triumph

T100C was exhibited, and he graciously signed the premier copy for me. All 24 copies are in excellent condition and one of these days I should donate them to the AMA library. A valuable contributor to *Motorcycle Collector Magazine* was Margie Siegal, as she is today to *Motorcycle Classics*. Her research and writing are outstanding. There are not many female motorcycle topic writers yet today, and even fewer 25 years ago when Margie’s work appeared in the *Motorcycle Collector* premier issue.

Perhaps readers would be interested in learning more about Margie, how she got her start in journalism, does she ride, etc.? Please let her know that her work is admired, respected and appreciated.

Ron Fish/Valley Forge, Pennsylvania

Ron,

Thanks for the letter. Margie does ride, and she does it aboard a classic Norton Commando. Check out a past road story of hers at bit.ly/siegal-norton. — Ed.

RIDERS

Rider: Joe Carrillo, Menlo Park, California

Age: 57

Occupation: Property management

Current rides: Ducati Desmosedici and 1299 Superleggera, Husky

701 S/M, KTM 1290 Super Duke, Yamaha TZR250, Honda NSR250, Suzuki RGV250, Honda NS250, Yamaha RD350LC, Kawasaki KH400, Velocette LE200 and about 50 more!

Joe’s 1986 Suzuki RG500 Gamma find: “I had pretty much given up on the idea of ever finding a nice Suzuki RG500 for my collection, but the other day, my good friend Graham Yates called to tell me an acquaintance of his had just done some handyman work for an elderly woman. Apparently, the woman’s late husband was a bit of a motorcycle buff and had several bikes of his still in her possession. The handyman did a couple of weeks of work for her, and in lieu of payment, he could choose one of the bikes. Guess what he picked out and came

home with? Yep, a basically new 1986 Suzuki RG500 Gamma with only 800 miles on it!

“Graham works at a local motorcycle shop called Catalyst Reaction (crstuning.com) in San Carlos, California, where the bike was taken for a carburetor cleaning and fluid change. Graham called me to come check it out. At this point, although I was jealous, I never thought I had a chance of owning it. I was just thinking that guy was in the right place at the right time, and I was happy for him. So as I was leaving, I halfheartedly asked Graham to offer the guy a trade for my Ducati 999R and some cash. Well, 10 minutes after I left, the phone rang. It was Graham, and he said load up your 999R and grab your cash, because the guy agreed, and it’s yours! I couldn’t believe it, so I moved very fast, before the guy changed his mind. Well, to make a long story longer, after I got it home and was going through all the extra stuff that came with the bike (spare parts, owner’s and service manuals, etc.), I came across a handwritten note that had my name, phone number and address on it.

“Yes, apparently I had originally sold the bike to this late gentlemen back in 1986, when I had a small business selling exotic motorcycles that I imported from around the world. I guess it was just meant to be!”



The Gamma shows just 1,313 kilometers, or roughly 816 miles.

"I think you have to look very hard to find ugly motorcycles that sold well."

More Contenders

I was very pleased to read the latest *Under the Radar* column in the September/October 2017 issue of the magazine. The story featured the Honda S90, but also gives "Contender" status to two other bikes: The Suzuki K11 Sport 80 and the Kawasaki 85 J1.

I will soon be working on a 1966 Kawasaki 85 J1TR, which is the trail bike version of the J1. I think that was a very good choice for a bit of focus. It is a somewhat rare little bike, as it was the first year that Kawasaki imported motorcycles into the U.S. as their own company. The J1TR was manufactured in 1966, using premix oil/gasoline. In 1967, this bike was replaced by the J1TRL, which was the same bike, but with "Superlube" oil injection. The 1966 version also utilized an all-chrome tank with painted



accents while the 1967 featured chrome side panels on each side of the tank. The 1966 model was painted a root beer-like brown color, while the 1967 TRL was painted a vivid bright red color.

The photo shows the 1966 Kawasaki 85 J1TR bike I have in the shop. This is obviously a "before" photo. It is "as discovered" in a garage in Sumner, Washington. I purchased this bike from a relative of its original owner. The bike is complete.

Following a major parts hunt, I have all the remaining chassis parts in storage waiting for overall restoration. Just too much other work in the shop right now. Keep up the great work with the magazine. I am an original subscriber.

Ben Schenk, Schenk Racing Enterprises/Eatonville, Washington

Remembering early Kawasakis

I am a 50-year Guzzi owner/rider, but have had many other cycles in my 75 years. The article on the 1964 Kawasaki M5 Pet (November/December 2017) caught my eye as I was around Kawis in their formative years. There is a mention in the article about the Meguro. When I was on Okinawa in 1960-1961 they were popular machines among the GIs stationed there. When I first saw them I thought them to be British Matchless due to the "M" on the gear cases and tanks, but upon closer

inspection they had "Kawasaki Steel LTD" on the data plates on the steering heads. Most bikes were the 500cc twins with single carburetors, but some had two carburetors. They sounded much like the Brit bikes and were faster than the Hondas of the day. At that time I had a Lilac twin that was a flathead 350cc boxer with an Earles fork on the front, with an electric starter and driveshaft. My friend had a 1963 Lilac twin with a rotary 4-speed transmission similar to the red one on Page 52 in this same issue. Kawasaki made a retro some

years ago that looked very similar to the Meguros of the early 1960s. It would be good to see some articles on these older Japanese productions. I remember your past articles on the Japanese Rikuo produced through 1955. And I have seen some at the motorcycle shows here in Florida. Lastly, Henri Marusho named the Lilac after his wife's favorite flower. I think they ceased production of the BMW clone in 1965. Keep up the best motorcycle magazine in the world!

Guzzi Jim/Panama City, Florida

Ugly bikes

Your excellent September/October 2017 issue underscores a most important point about the success of Honda Japanese motorcycles in the early years: they were not just "styled" but were integrated designs. The beloved Honda S90 (I had two) proves the point: sprightly, reliable, and simply elegant in their design. Hondas of that era always looked right to me. In contrast, the Ariel Leader and Arrow demonstrate the failure of later English design. The Arrow's red-and-white paint scheme was the ultimate example of putting "lipstick on a pig." Sadly, the Commando Hi-rider is an even worse example of the same thing. To underscore the point, after World War II, England produced the Corgi, America produced the Cushman Eagle, and

Japan produced the Honda 50. Engineering and design were far superior on the Honda.

I say this after spending a couple of wonderful morning hours on my 1989 Honda Hawk NT650 GT, and wondering why today no one will make a compact bike even close to it in terms of finish (polished cases, aluminum frame and swingarm, sandcast aluminum brackets), low weight (390 pounds) and good handling. No offense to the good folks at Royal Enfield, but this is much more bike than their historic singles, which I considered before buying and restoring the Hawk. Engineering, when combined with good esthetics, results in successful motorcycle sales. I think you have to look very hard to find ugly motorcycles that sold well.

Rick Campbell/Tigard, Oregon



Rick Campbell's swell 1989 Honda Hawk GT.

Café espresso: 1978-1983 Moto Morini 500 Sport

Samuel Dalziel Heron is hardly a household name. Yet he helped design the first successful radial airplane engines, invented the sodium-filled poppet valve (a vital component in high-power 4-stroke engines) — and lent his name to the cylinder head concept he created.

A Heron head has no combustion chamber as such: The cylinder head is flat but for the valve pockets, with the combustion chamber cast into the top of the piston. The design offered ease of manufacture, superior “swirl” (promoting more complete combustion and hence better fuel economy) while allowing higher compression ratios for more torque. Heron heads were fitted to engines as diverse as the Jaguar V-12, Ford “Super Duty” V-8, Repco-Brabham Formula 1 ... and the Moto Morini 500 Sport.

Designed by Franco Lambertini and Gianni Marchesini, the 500 Sport was a development of the 1973 Morini 3-1/2 (which



PHIL AYNSEY

was intended to dodge Italy's tax on bikes over 350cc). The 3-1/2 was an important step for the Bologna, Italy, maker, which up to then had focused on smaller sporting singles, and featured a new 72-degree V-twin engine. Essentially a bored and stroked version of the 3-1/2, the 500 was available in the U.S. in Strada and Sport versions, though the engines in both were identical.

Beneath the 500's interchangeable cylinder heads, two bowl-in pistons ran in iron-lined alloy cylinders (also interchangeable). The pistons drove side-by-side connecting rods running on a single, plain bearing big end, while the crankshaft ran on two ball bearings. The single camshaft was driven by a toothed belt and operated the overhead valves by pushrods and rockers.

Carburetion was by two 26mm Dell'Ortos and sparks by a magnetically triggered CDI from Ducati Elettrotecnica. Helical gears drove the dry clutch and 5-speed gearbox, with chain final drive. Starting was electric with kickstart backup.

The drivetrain fitted into a dual downtube steel cradle frame, with a rear swingarm controlled by two Ceriani shocks and a 35mm Marzocchi front fork. Grimeca cast alloy 18-inch wheels with triple-disc Grimeca brakes — two in the front, one at the back — were standard. In fact the roll call of components sounds like the cast of an Italian opera: Veglia instruments, Lafranconi pipes, CEV electrics, Fiamm horn, Paioli steering damper, Tomaselli clip-ons, Pirelli tires ... the list goes on.

Patriotism aside, Morini could have chosen better. Period testers complained of awkward switchgear, a wildly gyrating tachometer needle, an overly optimistic speedometer and electrical gremlins. Another significant beef: the Sport's ergonomics, with the seat too low and thinly padded, pegs too high and too far forward, and bars too far away, forcing riders into a cramped crouch. Other niggles included reluctant starting, a grabby clutch and vague shifting (the 3-1/2 was designed with a right-side shifter, but the 500 Sport was given a complex crossover to meet DOT left-foot shift requirements). It also lacked a proper oil filter, and required a seven-step procedure to access the air filter. Nor was it as fast as its Japanese competition, turning the standing quarter in 15.4 seconds at 84mph. By comparison, the 1978 Yamaha XS500 turned the quarter-mile in 14.57 seconds. It was a lot more expensive, too, with an



ON THE MARKET 1980 Moto Morini 500 Sport/\$6,065

Moto Morini 500s are thin on the ground in the U.S. So thin, in fact, that in a week of searching we failed to turn up a single one. Somewhat surprised, we turned to the overseas market, where, not too surprisingly, we found that, even if not exactly numerous, they're a bit easier to find. Of the half dozen we found in the U.K., this 1980 500 Sport was far and away the nicest. Showing 20,818 kilometers (just under 13,000 miles) on the clock, it's a rare (for the U.S.) black painted model. Claimed to be original and unrestored, it looks to be in close to perfect condition, with unmarred paintwork, a perfect seat, clean instrumentation and perfect black pipes. Not cheap, especially after shipping, but if it's as good as it looks, its high price might, in the long run, be money well spent. Contact the seller at mandsmotorcycles.co.uk

"The excellence of the Morini's handling is almost shocking."

MOTO MORINI 500 SPORT

Years produced	1978-1983
Power	46hp @ 7,500rpm (est.)
Top speed	104mph (period test)
Engine	479cc air-cooled OHV 72-degree V-twin
Transmission	5-speed, chain final drive
Weight/MPG	368lb (dry)/42-56mpg
Price then/now	\$2,795/\$2,500-\$6,000

MSRP of \$2,795 in 1978 compared to the XS500's \$1,589.

"To be justifiable, the Sport needs one great redeeming virtue. The Morini does have one long suit, and it's the classic Italian forte: handling," noted *Cycle* in 1979. "Initiating turns ... is a delight on the Morini, with the rider in absolute command at all times. There is none of the high-strung nervousness associated with the Yamaha RDs, just responsive,

precise steering." "The excellence of the Morini's handling is almost shocking," *Rider* wrote. "Such sensitivity of control is not to be found on mass-produced motorcycles."

"The Morini, then, is not made with the average buyer in mind," concluded *Cycle*.

"The Sport was made for the hard-core Italophile ... looking for a smaller Italian Flashbike. And if he buys a Moto Morini, he's found it." **MC**

CONTENDERS

Contenders to Moto Morini's 500 Sport

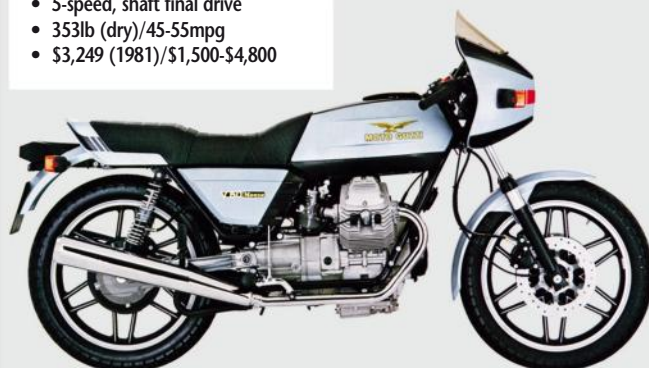
1980-1983 Moto Guzzi 500 Monza

After taking over Moto Guzzi in 1973, Alejandro de Tomaso commissioned Lino Tonti to design a new half-liter bike to take on the Asian imports. Tonti downsized the classic Guzzi shaft-drive V-twin, but with numerous design and cost-saving improvements. The 90-degree twin used Heron cylinder heads fed by 24mm Dell'Ortos. Drive to the rear wheel was via a dry, single-plate diaphragm-spring clutch and 5-speed gearbox with shaft final drive. The engine unit bolted to a dual downtube cradle frame with removable lower rails. Features of the 500 included Guzzi's linked braking system with three Brembo discs, an easily accessed oil filter and a redesigned swingarm/driveshaft pivoting in the gearbox.

The Monza version, launched in 1980, used 28mm Dell'Ortos, bigger valves, Nikasil-plated cylinders (instead of steel liners) and contact-breaker points replaced the problematic Bosch electronics. Its sportier ergonomics and a small fairing made it less comfortable in town, but worked well on the open road. Reviewers praised the Guzzi's handling, suspension and brakes, all of which were considered vastly better than the Japanese competition. "The Guzzi tracks through corners as if it were laser-guided," *Cycle* said. They also liked its robust drivetrain, but experienced

problems with suspect switchgear. And, like Morini's 500 Sport, the Monza was too rich — about 60 percent pricier than its Asian rivals.

- 1980-1983
- 48hp @ 7,500rpm/109mph (est.)
- 490cc air-cooled OHV 90-degree V-twin
- 5-speed, shaft final drive
- 353lb (dry)/45-55mpg
- \$3,249 (1981)/\$1,500-\$4,800



1977-1983 Ducati Sport Desmo 500

In response to a request from U.S. importer Berliner Corp. for a half-liter bike, Ducati produced the stodgy 1975 500 GTL, having passed over Ducati engineer Fabio Taglioni's new L-twin design. With limp performance and controversial styling by Georgetto Giugiaro, it was a sales disaster. And though he'd sworn to have nothing to do with the parallel twin, Taglioni was persuaded to breathe his magic on the engine. Italjet's Leopoldo Tartarini was also hired to glam up the bike.

Taglioni added desmodromic valve gear and boosted output to 50 horsepower with 30mm Dell'Ortos and higher compression. Tartarini specified a sturdier dual downtube frame, FPS alloy wheels, Paioli fork, Marzocchi rear shocks and triple-disc Brembo brakes. The resulting 1977 500 Sport Desmo had good power, steady handling and excellent brakes, but the Sport needed lots of revs to make its power, which produced copious vibration and exposed bottom-end weakness. Making things worse, the generally sad state of the government-owned Ducati factory showed up in awful build quality. By 1979, Dr. T's 500 Pantah L-twin was on sale. It was lighter, smoother, more reliable and showed Ducati's way forward. Just 50 or so Sport Desmos are thought to have been sold in the U.S., making it a rare — but not necessarily desirable — model.

- 1977-1983
- 50hp @ 8,500rpm/115mph (est.)
- 497cc air-cooled SOHC desmodromic valve parallel twin
- 5-speed, chain final drive
- 407lb (dry)/50mpg (est.)
- NA/\$1,100-\$3,800



Bonhams and Mecum gear up for Las Vegas, running the salt and our first calendar

2018 Las Vegas Motorcycle Auctions

Bonhams and Mecum Auctions are both gearing up for the 2018 Las Vegas motorcycle auctions. Bonhams' one-day event happens Thursday, Jan. 25, 2018, at the Rio Hotel & Casino, while Mecum will hold an expanded five-day auction extravaganza starting on Tuesday, Jan. 23 and ending Saturday, Jan. 27, at South Point Hotel & Casino. Bonhams has yet to release a full consignment list, but in keeping with their previous Las Vegas auctions we anticipate a 250- to 300-strong list of vintage bikes. Mecum, on the other hand, plans to sell an incredible 1,750 motorcycles, a huge jump up from the 1,000 bikes consigned for last year's four-day event. It will be interesting to see how that translates dollar-wise. Last year, Mecum reported total sales of \$13.7 million. Assuming the 2018 offerings are of similar value, the potential is there for total sales topping \$23 million. Bonhams' 2017 sales were an estimated \$4 million, with 240 bikes sold, but bikes at Bonhams tended to sell for more, selling at an average price of \$16,667 versus the \$13,700 average at Mecum.

Headlining Bonhams' auction (bonhams.com) is the ex-Jack Ehret 1951 Vincent Black Lightning (below), which Ehret rode to take the Australian Land Speed Record in 1953 at 141.509mph. Originally owned by Australian rider Tony McAlpine, who assembled the bike himself while working at Vincent, the Ehret Vincent was clocked at 130mph running along-



Mecum will offer this 1980 Mystery Ship, the fifth of 10 built.

side — and out-accelerating — the legendary Gunga Din, perhaps the most famous of all Vincents and the test bed for the Vincent Black Shadow and Lightning. Showing 8,686 kilometers on its Smiths Chronometric speedometer (all of them race miles), the Vincent was sympathetically restored by renowned Vincent expert Patrick Godet in France and is cosmetically completely original and as last raced by Ehret. Easily the most historically important bike to be offered at the 2018 Vegas auctions, it is expected to sell for \$500,000-plus.

Mecum (mecum.com) has several headliners in its 1,750-strong portfolio, including a bike we've always wanted to ride, a 1980 Mystery Ship. Designed by Craig Vetter of Triumph Hurricane and Vetter Fairing fame, only 10 of the Kawasaki KZ1000-powered Mystery Ships were built, the one on offer being No. 5. One of dozens of bikes being sold from the Bob Weaver Collection, the offered Mystery Ship shows a scant 48 miles on the odometer. It's in as-new condition, and perfect in every way. Also at Mecum is another classic we'd like to ride, a 1941 Indian Four, the last of Indian's great inline fours and this one looking particularly grand in its two-tone peach and red color scheme.

Viewed as an indicator of vintage bike values in the U.S., the Vegas auctions are closely watched by buyers and sellers for signs of where the market is moving.



“As Gary Ilminen discovered, you don’t have to pilot a 500mph projectile to qualify for a run at Bonneville.”

The Unlikely 1: What it means to race at Bonneville

Ask any diehard motorcyclist for their short list of places they want to visit and, more importantly, ride, and odds are good the famed Bonneville Salt Flats outside of Wendover, Utah, will be at the top of that list. A visit isn’t that hard to arrange, but a ride on the fabled flats? Not so much. Unless, of course, you’re willing to take the time to make the necessary arrangements — and spend the necessary money — to compete for a Land Speed Record run. Most of us aren’t going to go the second route, but as Gary Ilminen discovered, you don’t have to pilot a 500mph projectile to qualify for a run at Bonneville.

Ilminen, an occasional *Motorcycle Classics* contributor and *Ultimate Motorcycling’s* associate online editor, made not just one, but four runs at Bonneville, and on the unlikelyst of motorcycles: a 1984 Honda V30 Magna and a 1974 Honda CB350F 4-cylinder. Those experiences are at the core of *The Unlikely 1*, Ilminen’s engrossing account of his learning curve preparing a bike — or in this case two bikes — for Bonneville and actually riding on the salt, a not-so-easy challenge for a number of reasons.

For one, there’s the question of what to ride. For Ilminen, the Magna was an easy choice. Why? He already had one, and in the 500cc Production class it could slot into he thought it had performance potential. Ilminen didn’t expect to shatter any records on the Magna, but he came closer than he expected —

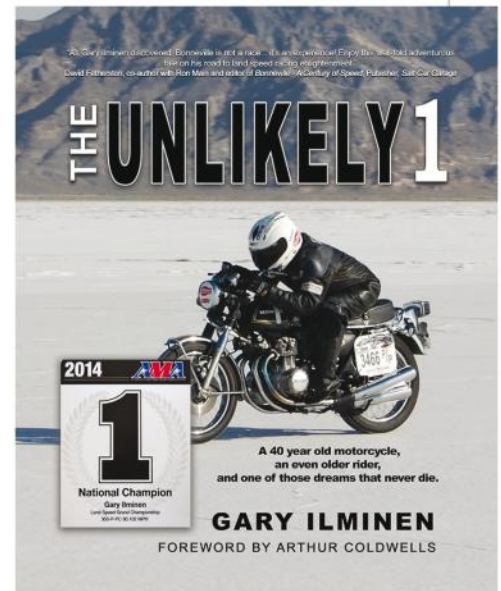
within 7.5mph in fact, a result he hardly could have predicted.

That first run in 2009 inspired him to return in 2010, this time on the CB350F, a bike he’d bought earlier that year as a rider but which, he came to realize, could slot into an unchallenged category, 350cc Production.

A two-way average speed of 72.63mph secured a record in the 350cc Production class — but for only a day. But convinced the lessons he’d learned so far could produce a winning run, he returned in 2012, this time with the Magna, again gunning for the 500cc Production class. Mother Nature is nothing if not fickle, however, and while he did get in one survey run, heavy rain the night before his planned record run closed the Salt Flats.

Not ready to give up, Ilminen returned in 2014 with the CB350F, this time aiming for a record in the recently added 350cc Classic Production class. Proving that experience is often the best teacher, Ilminen drew on everything he’d learned during his previous attempts on the salt to prep the little Honda for the hoped-for record run. His first timed run came in at 80.209mph, 6.2mph faster than his 2010 run, and his final run produced a two-way average of 80.1015mph. And an official Land Speed Record in the 350cc Classic Production class.

While Ilminen’s experiences racing on the salt are at the center of *The Unlikely 1*, the book is about much more than just the push to race. It’s also about what



it means to be a hard-core enthusiast, and how that enthusiasm pushes us to learn more about the sport we love.

When Ilminen first went to Bonneville, he had little idea he’d return three more times. And he had little idea how much he’d learn; about himself, about his motorcycles, and about the other enthusiasts who make Bonneville what it is.

If you’re on the fence about visiting, much less racing, at Bonneville, read *The Unlikely 1*. I’m betting it will inspire more than a few future Land Speed Record contenders. TouchPoint Press (touchpointpress.com); 94 pages, 60-plus color photographs, \$19.79. — *Richard Backus*

Motorcycle Classics 2018 Calendar

Here’s something we think belongs on every *Motorcycle Classics* reader’s wall; the *Motorcycle Classics* 2018 Calendar. Our first-ever calendar, it features 12 iconic classics including the Norton Commando, Moto Guzzi V7 Sport, Kawasaki H1 triple, Velocette 500 Clubman and more. The generous 21-1/2-inch by 13-3/4-inch format gives full priority to the beautifully reproduced full-color photographs taken by acclaimed *Motorcycle Classics* photographers Nick Cedar, Jeff Barger and more. Every monthly calendar entry includes a description of the featured motorcycle, and every monthly calendar includes scheduled holidays and calendar reminders. Our suggestion? Order two; one for yourself and one to surprise your best friend for Christmas. \$15.99. To order, see our ad on Page 77.



RADICAL RONDINE

1939 Gilera Four

Story by Hamish Cooper

Photos by Phil Aynsley

Honda transformed motorcycling when it released the CB750 in 1969, its radical multi-cylinder design launching the era of the Seventies Superbike. But was it as radical as the very first across-the-frame 4-cylinder?

That bike would be the Italian Rondine, developed in the 1930s. How radical was the Rondine? Try this: water-cooling versus the original CB750's air-cooling; double-overhead camshafts versus Honda's single-overhead cams; forced-induction supercharging instead of a bank of four conventional carburetors.

To be sure, the Rondine was a specialist racer, but all modern across-the-frame 4-cylinder motorcycles owe a debt of gratitude to the original version. To appreciate how advanced it was, one need only look at the history books: The Rondine won the 1939 European championship, the precursor to the post-World War II Grand Prix World Championship.

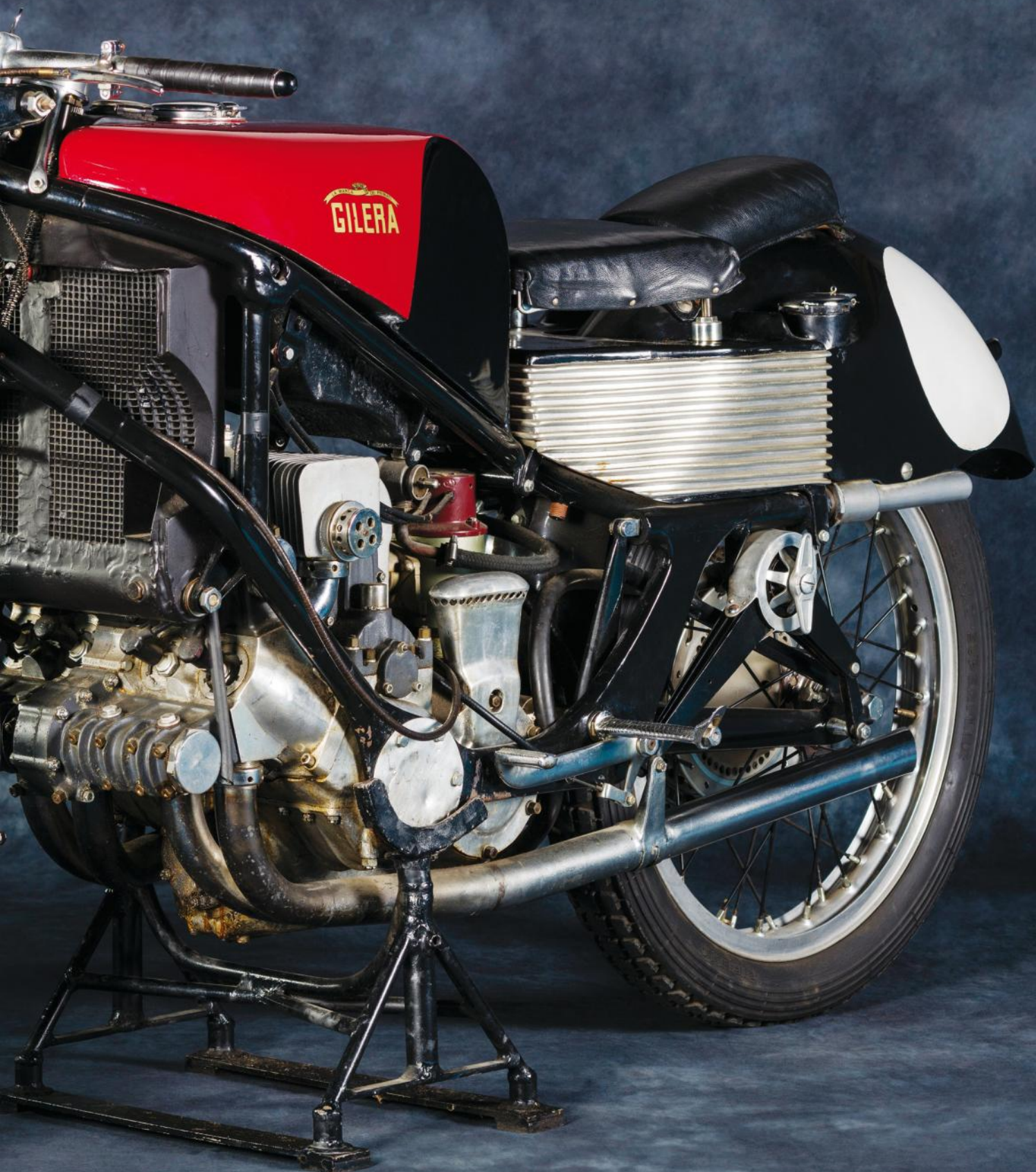
Free thinkers get working

The Rondine's design dates back to the early 1920s, and was developed by young Italian engineers Carlo Gianini and Piero Remor. It wasn't the first 4-cylinder motorcycle, as Belgium's FN and America's Henderson companies had been making them at least a decade earlier.

However, both those designs were mounted in-line with the frame, making for a long motorcycle with an engine that tended to overheat its rear cylinders for lack of air flow. Initially an air-cooled, single-overhead cam four, the Rondine showed promise, producing around 28 horsepower, around 10 more than its rivals.

Reliability issues and a lack of financial backing hobbled the project, although rider-engineer Piero Taruffi regularly ran at the front of the field in major Italian races. The project slowed, however, and was finally taken over by aircraft engine company C.N.A., with Gianini and Taruffi still involved. More resources meant major improvements could be made







to the design. The engine was changed from a single overhead camshaft to double overhead cams, the cylinders were inclined forward, and full water cooling was added along with a supercharger.

The result was the world's most powerful motorcycle, its 60 horsepower unheard of in the early 1930s. Finally it showed its true potential, coming first and second in Italy's Tripoli Grand Prix of 1935. By now it was named the Rondine (meaning swallow, although it is also claimed it was named after a famous Italian airplane). One swallow doesn't make a summer, and with more finances poured in six examples of the Rondine were eventually built.

Later in 1935, Taruffi broke the world flying kilometer record in the 500cc class at 152mph. More success seemed assured but C.N.A.'s owner, long-term Rondine supporter Count Giovanni Bonmartini, decided to sell his company and retire.

Fortunately, Giuseppe Gilera was waiting in the wings. He founded the Gilera motorcycle company in 1909, when he was just 22 years old, and taking full advantage of the two-wheel boom of the 1920s he turned Gilera into one of Italy's largest motorcycle manufacturers.

Forward thinker gets moving

Giuseppe Gilera had the foresight to realize that if the radical Rondine could continue winning major races, it would provide the ultimate advertisement for his company. Little did he know the impact his decision would have on motorcycling. MV Agusta and Honda would later develop similar GP racers, and Honda and Kawasaki would ultimately bring that technology to the everyday road rider to create the big-

bore "Universal Japanese Motorcycle" of the 1970s.

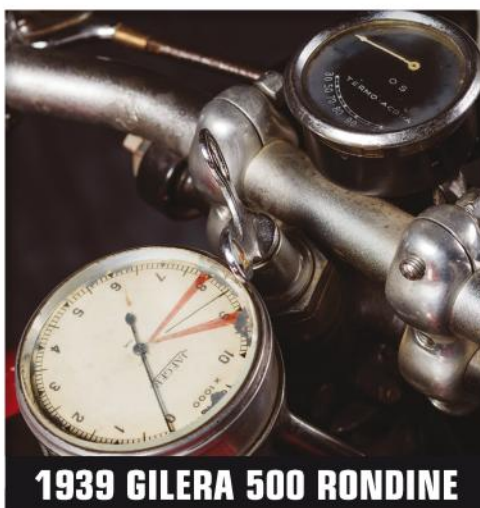
But before any of that, Gilera first had to turn the Rondine into a European championship contender. Its previous wins had mainly come about when its rivals, usually Moto Guzzi, had retired from the lead.

Taruffi went with the project to Gilera, where even more changes were made to the Rondine, turning it into the motorcycle you see in these photographs. A new tubular frame was designed to replace the previous pressed-steel version, along with engine modifications revolving around a more reliable crankshaft setup. The engine was now producing nearly 80 horsepower and holding together for entire GP-length races.

Its capacity was confirmed with several world records in 1937, including the absolute world record over the flying kilometer of 170mph. Although that record would soon be beaten by BMW's supercharged Boxer, at 173mph, the Rondine's record average of 127mph set over a full hour stood for more than a decade.

This was just the start of what would become a legendary GP engine design. The tubular frame had swingarm rear suspension and the unit-construction engine gave great design strength. The cylinders were inclined 60 degrees forward and the twin cams were driven by a train of gears running up the center of the engine. The 4-speed positive-stop gearbox was also advanced for its day.

Campaigned all over the Europe in the late 1930s, the Rondine was up against some mighty supercharged competition. Supercharging had first appeared in the aviation industry during World War I. By the 1930s, the technology had been adopted in U.S. automotive racing, with a supercharged



1939 GILERA 500 RONDINE

Engine: 492cc liquid-cooled DOHC inline four (inclined 60 degrees forward), 52mm x 58mm bore and stroke, 7.2-7.5:1 compression ratio, 80hp @ 9,000rpm

Top speed: 140mph

Carburetion: Weber w/Roots supercharger

Transmission: 4-speed, chain final drive

Electrics: Magneto ignition

Frame: Tubular perimeter w/engine as stressed member

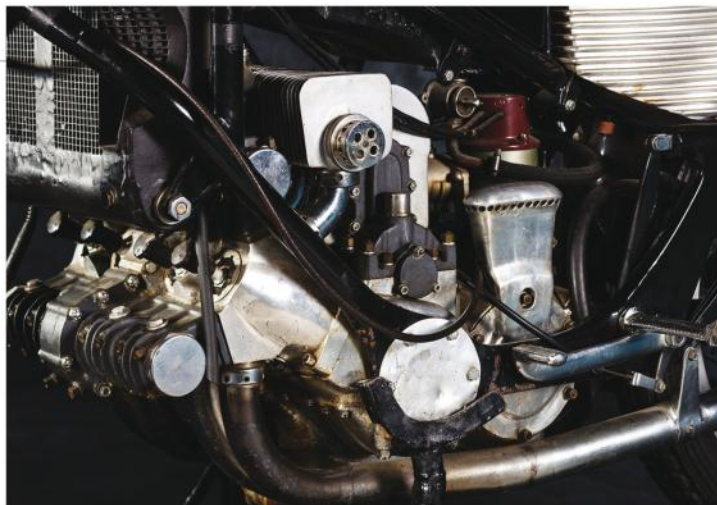
Suspension: Girder fork front, swingarm rear w/horizontal springs and adjustable friction dampers

Brakes: SLS drum front and rear

Tires: 3 x 21in front, 3.25 x 20in rear

Weight: 400lb (182kg)

Fuel capacity: 5.8gal (22ltr)



The Roots supercharger sits atop the forward-inclined, across-the-frame 4-cylinder engine (above).



The unusual casting is a breather for the gearbox (left). The "Continental" badge at the rear of the seat (above).

Duesenberg winning the 1924 Indianapolis 500. By the late 1930s, the world's fastest racing motorcycles were supercharged. There was Velocette's "Roarer" twin and the AJS V4, but BMW's awesome and reliable Type 255 Boxer twins were the ones to beat.

At the 1939 Isle of Man TT the BMWs took first and second. Later that year, at the Ulster Grand Prix, two AJS V4s led from the start and set the event's first-ever 100mph lap average. However, Gilera's Dorini Serafini swooped to a famous win after the cantankerous V4s retired.

The Ulster GP had been named that year as a European Championship event. Serafini's win also gave him the series title, meaning the state-backed BMW giants had been beaten by a small factory team. This victory was also the last international race in Europe before World War II intervened.

Legacy of the Rondine

Supercharging was banned after the war, before the Grand Prix World Championship was launched in 1949. Early factory testing quickly proved that resorting to traditional carburetors neutered the Rondine. Now producing just half the power of the 1930s, it was obviously time for a clean-sheet version.

Gilera brought back Remor, who had been working in automotive engine design, and he developed an all new air-cooled transverse 4-cylinder racer. Unveiled in 1948, it weighed just 275 pounds (125 kilograms) while producing 55 horsepower.

The next year, Gilera factory rider Nello Pagani finished runner-up to Les Graham and his AJS "Porcupine" double overhead cam twin by just two points in the inaugural World Championship. However, Gilera riders criticized the new machine's handling and Remor quit the factory, moving to MV Agusta.

Gilera then hired back long-time Rondine engineer Taruffi as race team director. His efforts helped Umberto Masetti to a convincing world championship title win in 1950. However, the Gilera still had handling issues and was beaten to the title in 1951 by Norton's Geoff Duke. The masterstroke was to employ Duke for the 1953 season. Once he turned the Gilera into a Manx Norton-type road holder, the 4-cylinder delivered both Duke and Gilera three 500cc titles in succession.

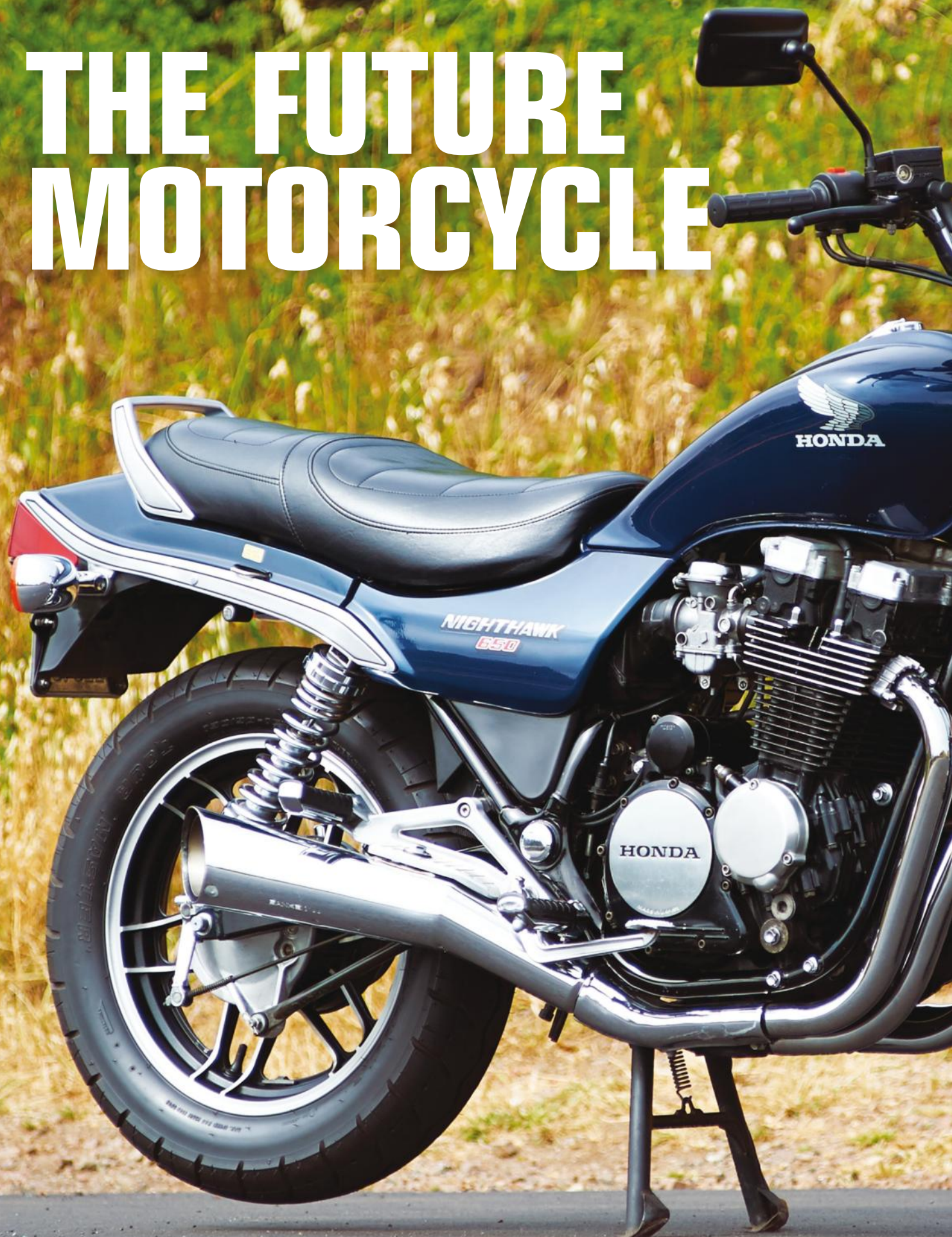
Meanwhile, Remor was busy at MV Agusta working his magic on an engine design that would bring that famous brand an unrivalled run of GP successes for many years to come. That engine was based on his post-war Gilera design, and both had their basis in the original Rodine engine, the world's first across-the-frame 4-cylinder motorcycle engine.

Where are they now?

Taking pride of place inside the entrance to the Piaggio Museum in Italy (museopiaggio.it/en) are the two most famous Rondine racers; the 1937 record-breaker and the 1939 championship winner are the last known Rondines in existence. Called the Carenata, the record-breaker's engine is housed in a longer frame with modified wheels and a fully enclosed aerodynamic shell developed in an aircraft factory wind tunnel. By contrast, the 1939 racer (the bike featured here) is unfaired, and viewers can pore over its design detail. The large museum space that now houses Piaggio's company history used to be Gilera's tool shop.

There is no knowledge of the whereabouts of the original air-cooled engines of the late 1920s and early 1930s. However, what appeared to be one of the original air-cooled engines appeared briefly in an open-wheeler racing car in the 1950s, before disappearing from sight. **MC**

THE FUTURE MOTORCYCLE





1985 Honda Nighthawk 650

Story by Margie Siegel

Photos by Nick Cedar

"I have beat the hell out of my Nighthawk, crashed it twice, ran it harder than anyone should ever run a nearly 30-year-old bike and it's never missed a beat. Over 15,000 miles, all I've done besides routine maintenance is replace a battery and rebuild the master cylinder." — *Nighthawk owner, posting in an online forum*

Fifteen years after Honda quit making them, Nighthawks are such popular bikes that eBay posts a Buying Guide for the model. Bombproof and easy to ride, Nighthawks continue to be an excellent choice for a first bike that a rider won't outgrow in four months.

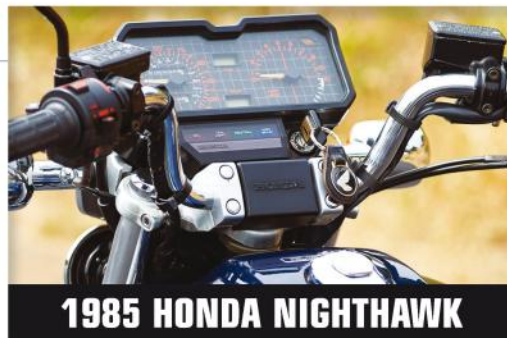
Good for just about anything you would want to do with a street bike — getting to work, riding around town, going on trips and even doing a little canyon carving, what they aren't good for is keeping mechanics in business, as they're legendary for their reliability.

From CB750 to Nighthawk

The Nighthawk was an outgrowth of Honda's classic CB750 Four. During the 1970s, the popularity of the CB750 led Honda to try several different engine sizes and a slew of different cycle parts. In the late 1970s, the chopper craze inspired the Honda CB650 Custom, a 627cc single-overhead cam version with a stepped seat, longer front forks, pullback bars and a fair amount of chrome. The Custom was sold between 1980 and 1981, but for 1982 Honda added some cosmetic changes and renamed the model the Nighthawk.

Although the 1983 650 Nighthawk was superficially similar to the Honda Nighthawk that preceded it, the bike was actually an entirely new bird. Starting from the top end, its all-new engine sported 16 valves, double overhead cams, hydraulic valve adjusters, an automatic cam chain tensioner, a hydraulic clutch operating the 6-speed transmission and solid state ignition. A driveshaft transmitted power to the rear end and twin discs with twin-piston calipers provided stopping power at the front. Honda marketed the new machine as powerful, sporty and maintenance-free, and the contemporary tests echoed its claims.

"Now picture THE FUTURE MOTORCYCLE," shouted *Cycle* magazine. "Open your eyes and



1985 HONDA NIGHTHAWK

Engine: 656cc air-cooled DOHC inline four, 60mm x 58mm bore and stroke, 9.5:1 compression ratio, 72hp @ 9,500rpm (claimed)

Top speed: 119mph (period test)

Carburetion: Four 32mm CV Keihin

Transmission: 6-speed, chain final drive

Electrics: 12v, capacitor discharge ignition (CDI)

Frame/wheelbase: Dual downtube steel cradle/57.5in (1,460.5mm)

Suspension: Telescopic forks front with TRAC anti-dive, dual shocks w/adjustable preload and damping rear

Brakes: Dual 10.75in (273mm) discs front, 6.3in (160mm) drum rear

Tires: 100/90 x 19in front, 130/90 x 16in rear

Weight (dry): 434lb (197kg)

Seat height: 31.1in (787mm)

Fuel capacity/MPG: 3.4gal (12.9ltr)/45-55mpg

Price then/now: \$2,798 (1983)/\$1,100-\$3,500

see that machine. No other motorcycle has incorporated all these no- and low-maintenance features." *Cycle* was also impressed by the Nighthawk's quarter-mile times, its smooth ride, seating comfort and cornering capability. "Something for everyone," pronounced *Cycle World*. "That something includes a lot. Performance that puts it at the top of the 650 class, outshines most of the 750s, and even shoves aside two of the three factory turbocharged bikes."

Now known for user-friendly reliability, the Nighthawk impressed contemporary magazines with its performance. Narrowing the wide Honda Four crankcase provided cornering clearance despite the low seat height. Six gears plus a relatively wide powerband made staying on the cam easy, and rubber mounting the engine stopped vibration.

The bike made a claimed 72 horsepower at 9,500rpm. Gas mileage was average for a 650, and the motorcycle started

up reliably and warmed up quickly. *Cycle World* said that the brakes were "strong, reliable, with a nice reassuring feel at the controls" and testers noted that the headlight threw a nice wide beam. Faults noted were the somewhat clunky transmission and grabby clutch, along with slow steering at high speeds.

With 34 years of hindsight, owners and mechanics acknowledge that Nighthawks aren't totally maintenance-free. Like most bikes of the era, oil and oil filters have to be changed every 2,000-4,000 miles. The alternator won't charge the battery at low rpm, prompting owners who do a lot of stop-and-go riding

to keep their bikes on a trickle charge. Some first-year bikes had problems with valve clatter, others had stator problems. Even so, while newer bikes may have more power and handle better on mountain roads, there are few bikes that can top the Nighthawk's reputation for long-term reliability. Nighthawks that have turned over 100,000 miles are not rare.





Many sizes to fit all

Honda built Nighthawks in 250, 450, 550, 650, 700 and 750cc versions. The 750 was the longest-lasting Nighthawk, appearing on showroom floors through 2003. The 650 version with the new engine was sold in the U.S. between 1983 and 1985, and few changes were made during the model history — Honda got it right the first time and saw no reason to argue with success.

The demise of the 650 Nighthawk may have had nothing to do with its popularity — or whether or not it had become technologically obsolete. In the early 1980s, Honda and Yamaha were involved in a trade war, each fighting to be No. 1 in U.S. sales. Hoping the 1981-1982 recession was over, Honda introduced 16 new bikes (no, that is not a typo — 16) for the 1983 model year. Their tactics ticked off Harley-Davidson, which had just been spun off from AMC and was, frankly, floundering. Harley went to the U.S. Trade Commission, proved that the Japanese companies had been dumping bikes in the U.S. below cost, and had a tariff slapped on bikes over 700cc. In response, Honda cut down on the number of models exported to the United States and made its 750 into a 700 (actually, 696cc), the better to avoid tariffs: The 650 might have been too close to the 700cc tariff-evader.

Even so, many Nighthawk owners kept their machines, and those who didn't found plenty of interest on the second-hand market. Nighthawks keep going with minimal maintenance, and put up with the sort of abuse typically meted out to used motorcycles. As a result, it is rare to find a low mileage Nighthawk, and most are very far from pristine.

"Hoping the 1981-1982 recession was over, Honda introduced 16 new bikes for the 1983 model year."

Seen in that light, a very common bike known for its user-friendly nature might seem a bit odd for a collector to lust after, but Dane Behrens is a collector, and he wanted a Nighthawk. "I have a friend who really wanted one back in the day, but they were sold out. Two years ago, my friend started looking for a Nighthawk again. He got me excited about Nighthawks and I found one. I was debating whether to tell him about it, but he emailed me to tell me he had found a Nighthawk, a 1983. Mine is the last year, a 1985," Dane says.

Dane's brother Marc, although not a bike guy, agreed to check out the project. "His involvement was enough to seal the deal for me and the seller. I immediately agreed to purchase the bike and arranged a marathon road trip. I drove several hundred miles, bought the bike, had dinner with my brother, and then drove a couple hundred more miles before stopping for the night. The next day I got up early to attend a swap meet and take in some vintage racing. I met with a mechanic and dropped off my Honda MT250 Elsinore engine to be rebuilt. I drove home that night with the Nighthawk, and the restoration process began soon after."

The good and the bad

"The bike I found had been listed as a mechanic's special on Craigslist," Dane explains. "It had a stripped oil drain plug, badly faded plastics, and a gooped-up tank and carburetors. But the Midnight Blue paint was good, the seat was recovered and the chrome was perfect." Experienced restorers look for a project with easily obtainable parts. It doesn't matter if the



The 656cc air-cooled inline 4-cylinder has 16 valves with hydraulic valve adjusters and an automatic cam chain adjuster.

engine needs rebuilding, if all engine parts are obtainable. But if, for example, the mufflers are rusted out and replacements aren't available, the restoration is doomed. Dane notes that mufflers with good chrome are hard to find, and chrome plating is expensive. Early Eighties Honda seats do not last, and good originals or reproductions are now impossible to find. Dane says the seat on his bike was recovered, but the cover is durable and very close to the original.

Dane planned on what he calls a sympathetic restoration — keeping as much as possible of the original components and the original paint, focusing on servicing and repairing the engine and cleaning and detailing parts, only repainting bits as necessary. "I painted the center of the mufflers. I wanted to highlight their unique design."

Even with the least obtainable parts needing no restoration, sourcing all the parts he wanted and rebuilding damaged

components took Dane over a year. "I kept running into things. I was working on the bike one day, and I realized that the forks looked bent."

There aren't many suppliers for Eighties Honda parts, and new-old-stock can be hard to find as Honda bought back parts at that time, giving dealers few reasons to keep old parts on their shelves. Honda had also started making some components out of plastic, which, while light and durable, doesn't last like metal does. And unlike metal, plastic can't be rebuilt, so it was off to swap meets and eBay to locate originals in good shape or true-to-form reproductions.

David Silver Spares (davidsilverspares.com) has some parts and Greg Clauss in Southern California (claussstudios.com) makes rubber and plastic parts from his own molds. "Still," Dane says, "It's tough finding parts and tough finding craftsmen to build parts that Honda no longer carries. I did locate a supplier who makes billet turn signal mounts to replace the ever-sagging and cracked factory rubber mounts. I also found a supplier to make custom decals that match the factory informational decals that had faded to near nothing on top of the fuel tank."

A sympathetic restoration, while perhaps faster and less expensive than a full-on nut-and-bolt, is still a lot of work. "I refinished the wheels, installed new Shinko R230 tires, drilled and tapped a new drain plug into the stripped-out oil pan, and repainted the oil pan, oil filter housing and oil cooler. I replaced a snapped off header stud and installed new cap nuts as needed. I rebuilt both front brake calipers, resurfaced the disc and replaced the brake pads. I resurfaced the rear shoes and drum, rebuilt the clutch slave unit and replaced the sight glasses in the brake and clutch master cylinders. I sourced the correct original mirrors to replace the faded plastic aftermarket units that were on the



Proud owner Dane Behrens aboard his sympathetically restored Nighthawk 650.



The Nighthawk received new rider footpeg rubbers along with a host of other rubber bits, and the center baffle inside the mufflers was painted silver to highlight its unique design (left).

bike when I purchased it. I repaired and repainted the cracked headlight shell and installed a new chrome bezel. I also rebuilt the combination speedo/tach unit," Dane says.

Cycle parts needed attention as well. "I had the fork tubes straightened, refinished the fork lowers, refurbished the anti-dive system, and installed new fork seals, new rider footpeg rubbers, shifter rubber, and shift linkage dust covers," Dane says. "I had paintless dent removal performed on the fuel tank, flushed it, touched up the nicks, and buffed the paint. I cleaned and synched the four carbs, but rejetted them with

larger pilot and main jets. Re-jetting the carburetors allowed the bike to start easier and warm up faster."

The former Craigslist parts bike was now ready to go. Where? Just about anywhere. "I've taken this bike on a Death Valley ride, some other club rides, local trips and going to work," Dane says. "When I went to Death Valley, it kept up well with the other bikes on the trip." Dane says since the rebuild was finished, he has had no problems with the bike. "It does just about anything well. You can tootle around or keep up with the big boys. One thing it really is not great at is going fast on twisty roads. The road holding on faster paced roads isn't the best. The longer forks make it difficult to flick the bike, but if you take it slow, it's no problem.

"The 650 Nighthawk is a stylish, fast, fun, reliable and nimble bike," Dane says. "It has a lot of character and sounds great. The low seat height makes it easy to ride. It's happy running at 1,500rpm, and it's happy running at 7,500 rpm. It's just a happy bike — and it makes me happy." And in the end, isn't that the whole point of owning and riding motorcycles? **MC**



FIELD FIND REDUX

1963 Norton Electra ES400

Story by Ian Easton
Photos by Craig Easton

Regular readers may recall the story of a 1968 Yamaha YR2C (*Field Find*, September/October 2016) and how it languished in a field for decades alongside the Norton featured here.

My son, Craig, negotiated a deal with the owner and brought them home, where we set to work on them. Decades of exposure to the elements had not been kind to these bikes, and had it not been for their relative rarity they would probably have been destined for the scrap pile. Their fate, however, turned when we decided they were worth restoring, even though we knew there was an enormous task ahead of us.

After completing the Yamaha we turned to the Norton. The first thing I discovered about the Electra is that in the sphere of Norton owners and classic bike enthusiasts, when asked about it, the Electra was almost always met with much derision. Why is that?

Comments are always about the bike being unreliable, both electrically and mechanically, leaking terribly, vibrating too much, and using a built-up frame not typical of a Norton. That doesn't leave much left to be good about the bike. Its only redeeming value it seemed was that it was fitted with Norton's reputable Roadholder forks and the full-size drum brakes from the bigger models. I was even told at one point to keep the forks and throw the rest away. These comments didn't typically come from riders with firsthand experience of the Electra, and it made me think that these myths were just being passed down through generations of motorcyclists. To find sympathetic and knowledgeable owners, I looked to the members of the U.K. Norton Owners Club (nortonownersclub.org). The Lightweight section of the club's online forum was full of help, guidance and encouragement for the Electra.

Electra development

From 1958 to 1965 Norton produced what became known as its Lightweights, starting with the Jubilee, a 250cc 4-stroke twin. The Jubilee was released to celebrate Norton's 60th anniversary — its diamond jubilee. The plan was to encourage new riders into the Norton fold, who would then step up







1963 NORTON ELECTRA ES400

Engine: 383cc air-cooled OHV parallel twin, 66mm x 56mm bore and stroke, 7.9:1 compression ratio, 25hp @ 6,800rpm (claimed)

Top speed: 90mph (est.)

Carburetion: Single 7/8in Amal monobloc

Transmission: 4-speed, chain final drive

Electrics: 12v (two 6v in series), coil and breaker points ignition

Frame/wheelbase: Pressed steel with tubular side frames/51.5in (1,308mm)

Suspension: Telescopic forks front, dual shocks w/ adjustable preload rear

Brakes: 8in (203mm) SLS drum front, 7in (178mm) SLS drum rear

Tires: 3 x 19in front, 3.25 x 18in rear

Weight (wet): 350lb (159kg)

Seat height: 32in (813mm)

Fuel capacity/MPG: 3.5gal (13.2ltr)/50mpg (est.)

Price then/now: \$789 (1964)/\$1,500-\$7,000



to the bigger models as they gained experience. It was also meant to capture a share of the affordable get-to-work transportation sector being capitalized on by rival companies such as Triumph and BSA.

1960 saw the introduction of the Navigator, a 350cc version of the same basic engine design as the Jubilee. Handling was improved thanks to the incorporation of Norton's own Roadholder forks and braking was improved with larger, full-width brakes. The frame also saw the addition of two steel reinforcing plates behind the steering head. It could reach 90mph (almost).

At the insistence of the U.S. Norton importer Joe Berliner, the Electra debuted in 1963. The bore was bumped up from the Navigator's 63mm to 66mm and the stroke stretched out from

56mm to 58mm, though the final production version settled for the 56mm stroke. The capacity was now 383cc, which Norton conveniently rounded off to be designated as a 400. This was Norton's first electric start motorcycle, hence the ES designation — and their last until 1975. Electra production ran until August 1965.

The Electra

The Electra's electrics are the first point of interest. It was common for small-capacity bikes of this period to have a 6-volt electrical system, but as

some additional juice was needed to cope with the Lucas M3 starter motor and handlebar-mounted turn signals a 12-volt positive-ground system was used, but provided by two 6-volt batteries wired in series. One battery sits in a frame-mounted



Owner Ian Easton aboard the Electra (right). It's a small bike, but was clearly styled to ape its larger brother, the mighty 750cc Atlas.

bracket under the seat, while the second is on the left side of the frame behind the toolbox cover.

By today's standards the electric start system is big, heavy and cumbersome, but it all works. A push of the button on the left handlebar sends power to a car-type solenoid located within the vertical frame channel behind the carburetor. This kicks in and gets the Lucas M3 starter spinning, which turns a single row chain linked to a three-pronged sprag clutch affixed to the left end of the crankshaft, outside of the alternator. The bracketry and mechanisms give the left side cover of the engine its unique shape, making the engine appear to bulge out when viewed from the front.

The Wipac-supplied handlebar switchgear for the left side is a combined high/low beam with a red starter button on top and a black horn button below. The right side has the turn signal switch located next to the choke operating arm. Today's ergonomics would dictate reversing the switches, as you must remove your hand from the throttle to reach the turn signal switch. A 6-inch Wipac headlight attempts to light the way for night riding. Hella turn signals are another unusual feature on the Electra. There are only two, mounted on stalks within the handlebar ends, making them vulnerable to damage. We didn't fit them to our Electra.

Ignition comes from two coils mounted under the gas tank, triggered by two sets of points mounted high on the right side crankcase. They are on separate plates, independently adjust-

able so that timing can be accurately set for each cylinder.

Even though the Electra engine was based on its smaller predecessors, it shares few common parts. The engine is oversquare, having a 66mm x 56mm bore and stroke. The connecting rods run in plain bearings, with a thin, 7-inch-diameter flywheel between the cylinders. You can tell this engine was designed to rev. A pinion gear connected to the crankshaft on the right hand side drives a geared oil pump. Two camshafts are set high in the crankcase, lifting 3-inch-long pushrods to activate the valves. Valve adjustment is by an eccentric cam. Separate cast-iron barrels extend quite far into the crankcase, leaving a relatively short cylinder with five cooling fins. Here's where both of the three-ringed aluminum pistons do all the hard work.

The claimed 25 horsepower finds its way to the rear wheel from the crankshaft driving an eight-plate clutch connected by a single-row chain to the 4-speed gearbox. The right-side foot shifter operates a one-up,



The Electra as it looked just after unloading the bike into Ian's garage (left). Black widow spiders hid throughout, and the carburetor was full of mud.

three-down gear configuration. Fuel delivery comes from a single 7/8-inch Amal Monobloc carburetor, and the exhaust passes through two single-wall exhaust pipes that are a push fit into the dual aluminum heads.

Holding all this in place is the much-talked-about frame, and after disassembling the bike I could understand what all the fuss is about. It is assembled from six different parts: a left and right side; a central spine located behind the engine; a pressed steel front “down-tube” incorporating the steering head; plus two reinforcement plates. Five bolts hold it all together. Engine removal required the frame to be loosened up and the bottom bolts removed so that the frame could pivot open, allowing the engine to drop free. There is a lot of room for misalignment and flex.

Due to increased weight in comparison to the Jubilee and Navigator, Norton felt the Electra's wheels and brakes needed to be larger, so it used the setup from the larger Dominator. Up front is an 8-inch single-leading-shoe brake laced to a 19-inch

The frame is assembled from six different parts. From top, the central spine, front with steering head, two reinforcement plates, and the left and right sides.



rim, while the back uses a 7-inch single-leading-shoe brake on an 18-inch rim. The shapely fenders are heavy steel items, chrome-plated for the U.S. market, but painted black for the eventual U.K. market bikes, with chrome being an option.

Our Electra

Our Electra, with matching engine and frame number EL/364, left the factory and was sent to the U.S. around May 1963, making it one of the earliest ones built. We have no idea what kind of life it had before we got it in February 2013, but we do know that the previous owner left it outside for about 40 years. The odometer, which looks to be original, reads more than 21,000 miles, so the bike had seen some action before being parked and forgotten. The engine was seized, it was missing the seat, the left exhaust pipe, the inner styling panels, and (coincidentally) it had a Yamaha YR2C front fender — oh, and it was all rusty. It was also a haven for black widow spiders.

After a wash and a photo session, notes were made and a list of needed parts created. Now it was time for disassembly. Surprisingly, despite its outside appearance the tank had only minor rust inside, so we filled it with white vinegar and let it sit for a few days while we worked on the rest of it.

As much of the engine as possible was removed before extracting it from the frame. After removing the head we could see that the left cylinder was badly corroded. The piston wouldn't budge, but after lots of heat and hammering on a steel bar on top of the piston we finally got it loose, but at the price of a cracked cylinder liner. New-old-stock standard size pistons were obtained from the Norton Owners Club and new liners fitted by LA Sleeve (lasleeve.com).

Everything else in the engine looked remarkably good, except for a small piece of alloy chipped off where the clutch actuating mechanism sits and holds a large diameter C-clip. Every part was cleaned and inspected. The clutch plates and springs all measured up as new. The gears were all in perfect condition, as was the starter sprag clutch, the primary chain and the starter motor chain. The internals seemed to belie the mileage on the odometer.

New bearings and seals were fitted to the crankcase. A specially ground bearing, unique to the Electra, is required



The starter motor arrangement (top). Power comes from two 6-volt batteries (left).





for the timing side. Failure to fit this bearing will result in lubrication problems and premature wear on the crankshaft. New bearing shells were fitted to the connecting rods, as well as new pistons and rings. Despite the cylinders being one casting, the cylinder head is two separate pieces. The left exhaust valve, which had sat open exposing the cylinder internals, had to be replaced. All the joint surfaces, especially the heads, had to be surfaced, and for this we ground them over oiled wet/dry sandpaper on a flat surface. It would have leaked terribly if we hadn't done this. The carburetor, which was full of mud, cleaned up well, and for peace of mind we installed a new set of jets.

The frame was probably the hardest thing to get apart, as some of the bolts had rusted inside the steel spacer tubes under the seat. A replacement seat was found and a new cover and foam fitted after repairing the base, which had split and buckled. A hard-to-find front fender was located and sent with all the other chrome bits to El Monte Plating in El Monte, California, to bring back their former luster. A new rim was found for the front wheel, and the spokes were all tin/zinc plated at home.

Assembly was easy, but the procedure was a little different than that for a "normal" framed bike. On the Electra, the frame is bolted piece by piece to the engine, with the advantage that you don't have to lift a heavy engine into the frame. The forks were rebuilt with new stanchions, again supplied from NOC. We managed to save most of the original wiring harness, as it had

been tucked away and protected all those years. The original high handlebars were discarded in favor of the lower U.K. type.

As he did with the Yamaha, Craig painted the bodywork. We picked a shade of silver (the bike was originally red) we thought close enough to Norton's original silver, topped by four coats of two-pack clear coat. We are very happy with the results.

And the verdict is?

Well, having spent so much time on this bike and having looked at it from every possible angle, I've come to the conclusion that it's quite an attractive bike. It's very compact and looks well balanced. The engine cases have fine curves to them that seem to just flow together. Like all bikes, it has its quirks, but overall it's really nice to look at.

Time to try it out: Turn on the fuel, tickle the carb until you see fuel seep past the button, turn the headlamp mounted ignition key on, see the ammeter flicker, then give the kickstarter more of a push through rather than a kick. One or two prods and it burbles into life. The exhaust note gives the impression that it's a much bigger engine than it is. Sitting astride the comfortable seat the controls are a bit of a stretch. Pulling the clutch lever in takes a bit of effort while the right side foot lever has to be lifted a long way before a satisfying click is heard as first gear is engaged. As you pull away you can tell the bike wants to rev, but it also has plenty of low-down torque, so low speeds in upper gears are manageable without any snatching from the clutch.

The electric starter protrudes from the left of the engine, seen here in front of Ian's left foot (right).

Gearshifts are smooth, and riding at an indicated 50mph brings a slight buzz to the handlebars. Acceleration isn't fast, but it is good enough to stay up with city traffic. Handling is surprisingly good. It seems to carry its weight down low and feels quite planted in the curves. Rolling from side to side doesn't take much effort at all. As for the brakes, I know they should be good, but for the moment I think they need some bedding in and more adjustment as they are brand new and a little weak.

As for oil leaks, there's a little bit of misting from the valve covers and there's a minor drip from the filter cover. But this is a newly built engine so some retorquing needs to be done. Despite the naysayers, Craig and I have found the Electra to be good looking. It handles well, runs well, sounds great and generates lots of interest. As for reliability, only time will tell, but I think that will come down to a regular maintenance regimen.

The biggest thrill of all though was the day Craig and I had the Norton and the Yamaha out on the road side by side. It was a bit emotional thinking of the past they had both shared, and now here they were again doing what they were designed to do — being out on the road. We accelerated past each other over and over, enjoying the sounds of an old 2-stroke and an old 4-stroke. We looked at each other and smiled. It's been a long journey, but certainly worth the trip. **MC**



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ARIEL EXHUMED





1913 Ariel 3-1/2 HP Deluxe Roadster

Story and photos by Robert Smith

Without question, the tensioned wire-spoke wheel was one of the most significant inventions of the 19th century.

Without it, bicycles and early motorcycles would have had to use heavy, rigid and unforgiving wooden wheels. For this innovation we have to thank James Starley and William Hillman of Coventry, England, who quickly incorporated their patented wire wheels on the bicycles Starley was manufacturing. Because their invention made their bicycles much lighter, they named them Ariel — the spirit of the air.

In 1896, Starley merged his company with Westwood manufacturing, acquiring at the same time the Selly Oak, Birmingham, England, site that would become Ariel's home for the next 70 years. Like many cycle makers at the time, Ariel was soon experimenting with the internal combustion engine and produced its first self-powered vehicle in 1898, a tricycle with a 1.3 horsepower De Dion-Bouton single-cylinder engine driving the rear axle. By this time, Ariel had been bought by Charles Sangster's Components Ltd. Ariel's first two-wheeled motorcycles appeared around 1901, with proprietary engines from Minerva and Kerry.

It was an Ariel motorcycle that was selected by the Auto Cycle Union (the U.K. motorcycle sports' governing body) to enter the 1905 International Cup Races. The 6 HP JAP-engined Ariel, ridden by J.S. Campbell, recorded the best performance with an average speed of 41mph. And while Ariel had also been experimenting with its own engines, their next significant model used an engine by Coventry manufacturer White and Poppe.

Introduced in 1909, the Ariel 3-1/2 HP used a side-valve White and Poppe single-cylinder engine with a distinctive cylinder head with diagonal fins and widely spaced intake and exhaust valves (sometimes known as a "T" head). These bikes were known as "the Ariels with valves a mile apart." The engine was so successful that Ariel bought out the patents from White and Poppe in 1911, and started manufacturing the engines themselves,



The 1913 B.C. tag was found, though it had been badly burned (above). The "T" style head uses widely spaced intake and exhaust valves (far right).

at the same time increasing the engine from 482cc to 498cc. They continued to build motorcycles with the "mile apart" valves until 1926.

1913 Ariel 3-1/2 HP

By 1913, Ariel's 3-1/2 HP range included a TT model and the Deluxe Roadster. The TT model was intended for the Isle of Man Tourist Trophy time trials and as such was fitted with minimal equipment. The same T-head, side-valve engine was housed in a sturdy open cradle frame with dual top tubes and a Druid front fork. Fuel was by an Amac carburetor with ignition by Bosch magneto. (And yes, it's Amac, not Amal, which was formed in the late 1920s by the amalgamation of three British carburetor makers: Amac, Brown & Barlow, and Binks.) A drip-feed total-loss lubrication system used a sight glass on the shared oil/gas

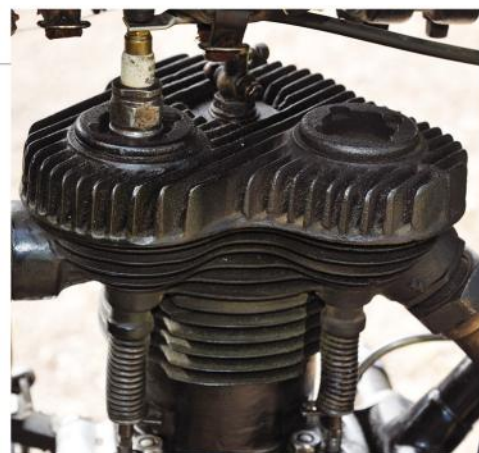


1913 ARIEL 3-1/2 HP DELUXE ROADSTER

Engine: 498cc air-cooled side-valve T-head vertical single, 86.4mm x 85mm bore and stroke
Top speed: 60mph (est.)
Carburetion: Single Brown & Barlow
Transmission: 3-speed epicyclic hub gear, belt final drive
Electrics: Bosch magneto ignition
Frame: Steel open-cradle w/engine as stressed member
Suspension: Druid fork front, rigid rear
Brakes: Stirrup-type wheel rim brake front, leather pad on steel rim rear
Tires: 2.75 x 21in front and rear
Price then: \$287 (£59, 1913)

tank, with a pressure plunger feed for extra lubrication if required. Single-speed drive to the rear wheel was by leather belt.

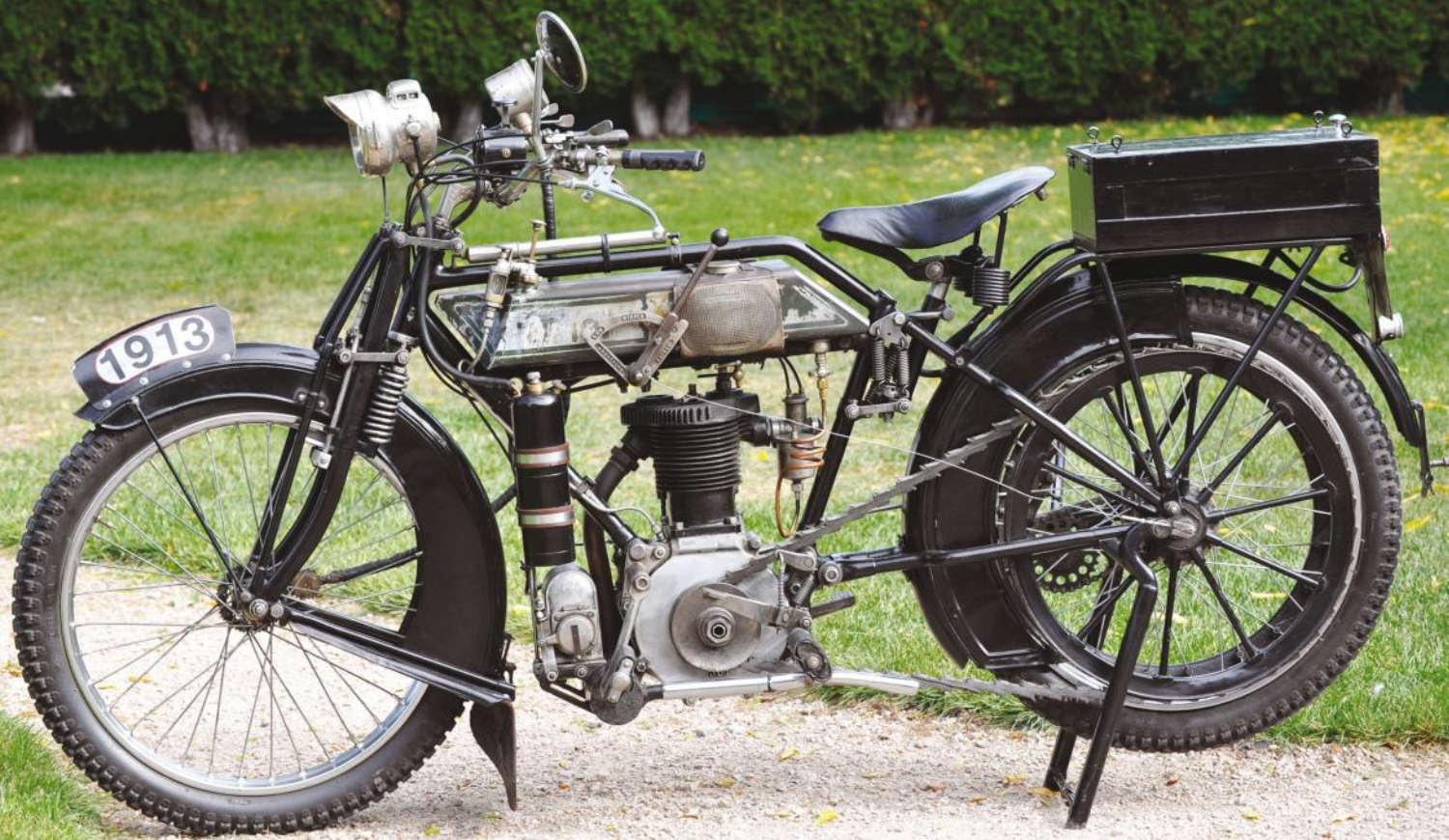
The TT model featured narrow fenders, footpegs instead of floorboards, a sprung



seat, dropped handlebars, a rear carrier doubling as a pillion pad and a small leather tool pouch behind the seat tube. It retailed for £47 (\$229), and was reasonably successful, placing 9th and 12th in the 1913 Senior TT.

More expensive at nearly £59 (\$287) was the Deluxe Roadster model. It used the same basic engine as the TT but with a Brown & Barlow carburetor. Drive to the rear wheel was through a toothed leather belt to an Armstrong 3-speed epicyclic gear and clutch in the rear hub. A foot clutch on the right was mated to a hand shifter on the left side of the gas tank and the engine was started by a kickstart lever. In addition to the 3-speed hub, overall gearing could be raised or lowered by adjusting the engine pulley. This option was first shown at the Stanley Cycle Show in London, England, in 1910: Said the show guide, "The Ariel





adjustable pulley model will also be on view, with and without pedalling gear."

Also seen at the 1910 show was Ariel's ingenious starting assist. Flipping a lever on the outside of the crankcase changed the intake valve lift to a "half position," making it easier to turn the engine over. When the engine started and ran, the intake would automatically flip back to its full lift position for full power. On models without a clutch or kickstarter, the manufacturer guaranteed that with the device,

"the machine will start at a walking pace within three yards."

In addition, the Deluxe was fitted with touring handlebars and sturdier fenders, with a side valance at the rear to keep the rider's clothing (likely a voluminous great coat) out of the back wheel. The seat also featured a sophisticated parallelogram spring system for rider comfort. Braking at the rear wheel was by a friction block acting on a dummy rim and operated by a left side foot pedal and crossover. The

front brake was a bicycle-style stirrup brake acting on the wheel rim. Optional equipment would have included a speedometer and acetylene lighting set.

Jim Green's Ariel 3-1/2 HP

The story of Jim Green's Ariel goes back 30 years to 1987. At the time, Green was working for B.C. Hydro in the mountains of southern British Columbia about 150 miles east of Vancouver. It was near the valley town of Merritt that he found some



The pressure plunger on the shared oil/gas tank can feed extra oil if required.

Horsepower

If 3-1/2 horsepower doesn't sound like much for a motorcycle good for at least 50-60mph, you'd be right! Before 1910, when the White and Poppe engine was designed, there was no fixed method of assigning a horsepower rating to a motorcycle. So the British government invited the Royal Automobile Club (RAC) to create a horsepower formula. The formula the RAC came up with "was not intended to be a scientific statement of horse-power ... manufacturers were asked to adopt the rating for the purposes of catalogue description." The government adopted the RAC rating system for taxation purposes.

The RAC made a number of assumptions and generalizations in coming up with their formula. For example, it ignored stroke length, basing the calculation on bore only. Their final equation: horsepower equals bore (in inches) squared, multiplied by the number of cylinders and divided by 2.5. For the 1913 Ariel 500, the formula gave a figure of 4.62 horsepower for tax purposes.

The RAC rating system has been criticized for hindering motorcycle engine development in the U.K., because the taxation formula favored smaller bore engines, so many U.K. bike makers adopted smaller bores and longer strokes. But smaller bores meant smaller valves and lower revs (for the same piston speed), limiting "actual" horsepower potential. It perhaps explains why even as late as the 1970s, British motorcycle engines were typically "under-square," even though the RAC tax formula was abandoned in 1947.



pieces of a very old motorcycle lying on the ground near a dilapidated cabin. The bike was in a similar state.

"What I found was the frame with the engine and gas tank," Green says. "The name Ariel was familiar. I knew it was English." All Green knew about Ariel was that "they made a Square Four." Green managed to locate the landowner and got permission to salvage the bike. "My work crew thought I had gone nuts," Green says.

Returning to the site with the landowner, Green quickly located the front fork, rear sub-frame and wheels, "complete with the Dunlop tires rotting off the bead-edge rim," Green says.

"There was also a license plate from 1922 and the rear fender. With a little more searching, we located the Armstrong shifter for the 3-speed hub gear, a spring seat pillar and footrests." The parts were spread over an area the size of about four football fields!

Green returned to the site a number of times over the next year, and located most of the rest of the Ariel, digging into what turned out to be a collapsed building that had been totally overgrown years ago.

"It was the remains of the implement



shed," he says. "I found the speedometer and small pieces necessary for proper assembly." Green dug down around six feet and sifted through an area of 15 by 25 feet.

Green found the seat 60 yards away, and in the remains of a bonfire a farther 100 feet away he found the twisted and flattened front fender. Also in the pile was a B.C. license plate from 1913, which Green managed to salvage, though it was badly burnt.

"I can only surmise the homesteader was planning to use the motor on a piece

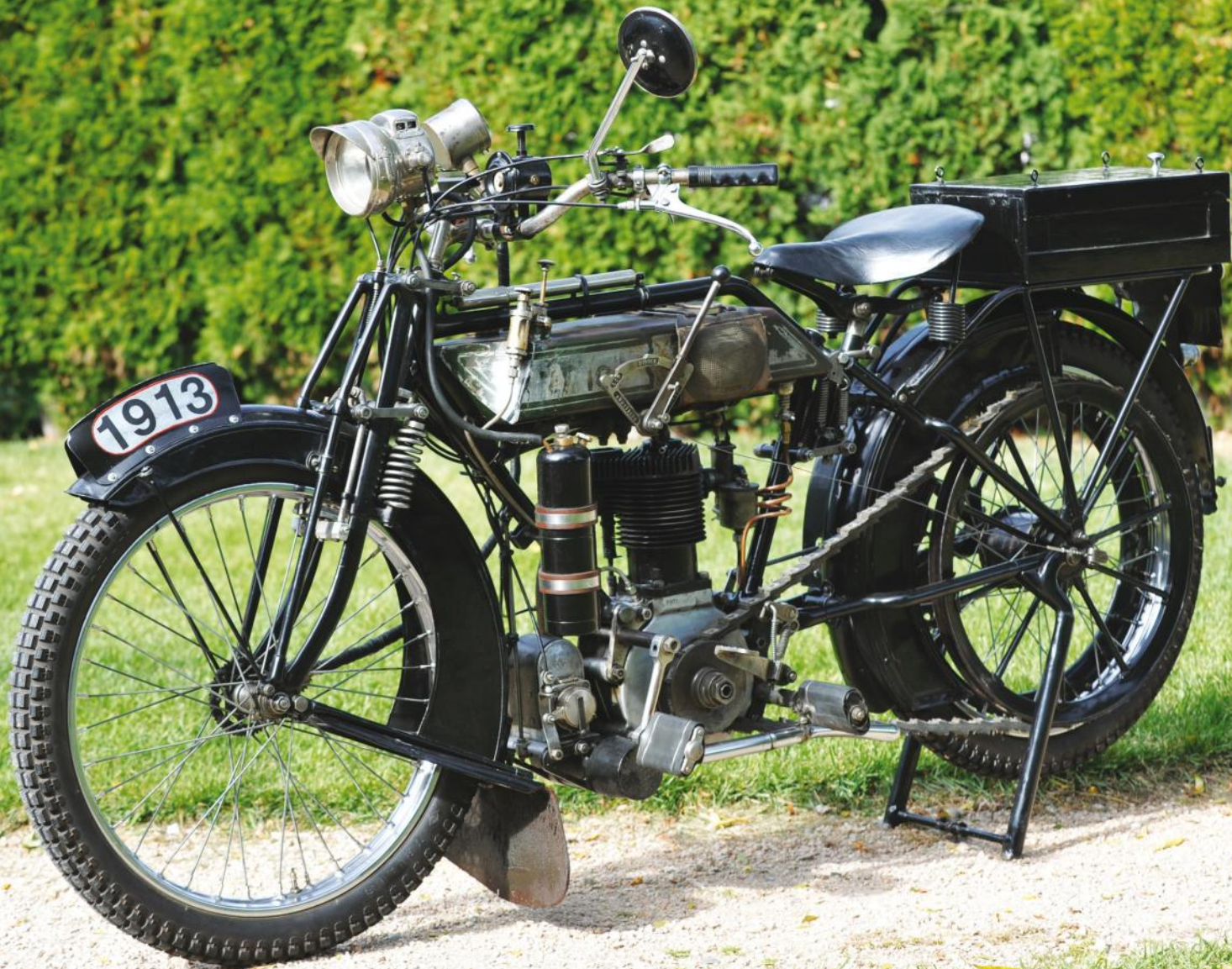
The seat uses a parallellogram spring system (above). The rear brake is a leather shoe that presses against a ring attached to the rear spokes (left).

of machinery or some implement for the farm. There was broken down and dismantled machinery everywhere," Green says.

Green collected all the items he could find and returned with them to his shop in Vernon, B.C. It was then, while rifling through his accumulation of old motorcycle information that he found some pictures of a 1913 Ariel 3-1/2 HP Deluxe Roadster with the same components and paint trim. That's when he knew what he had found.

"During the months to follow, my wife knew where to find me," Green says: "At my desk writing letters to transportation museums, Ariel owners clubs in England and the U.S., other marque clubs — anyone who may have information that would be of assistance. I was told I had a very rare and desirable machine and that there may only be one other in existence."

Along the way he acquired a copy of a 1913 owner's manual, sales literature, and copies of road tests by *The Motor Cycle* magazine in June 1912 and October 1913.



Green decided not to restore the Ariel but just to reassemble it, making repairs and replacing parts as required. It took him the best part of a year to reassemble the Ariel, keeping most of the “patina” that the bike had collected.

“It took 10 months of evenings and weekends to complete the old Ariel and put her back on the road again. What a thrill it was when the engine fired right away and ran flawlessly after being discarded for junk in 1922 — 66 years earlier! The first time I displayed her at a local vintage motorcycle show, my picture was in the newspaper,” Green recalls. “I got a phone call that night from a fellow who used to own a similar machine. This elderly gentleman came to my home with two photographs: the first was of his father astride his new 1913 Ariel taken in Toronto in 1913; the second was taken in 1920, showing a 3-year-old boy beside his father’s motorcycle in Calgary.

“He was given this machine in 1931 and operated it until 1937, when he sold

it and bought a Rudge. His memory of that old Ariel was clear and intimate; after all, it was his first motorcycle. He said mine is exactly as his was. He even had spare parts still, after all these years, which he gave me. He was 73 years of age.”

Since reassembly, Green has shown

“The problem is with the brakes — or the lack of them.”

the Ariel at a number of vintage motorcycle and car shows in southern BC and Canada’s western provinces. “At all these meets and rallies she has received top awards,” Green says. “She is original, complete and authentic. Only the repairs necessary were made during reassembly. The original finish remains on the fuel tank. It gives her character.”

As well as displaying the Ariel, Green also sometimes takes it out on the road

— but not in rush hour, he says. “I have her geared for a top speed of 50mph. But changing the adjustable engine pulley and gearing her up, she may top 60.”

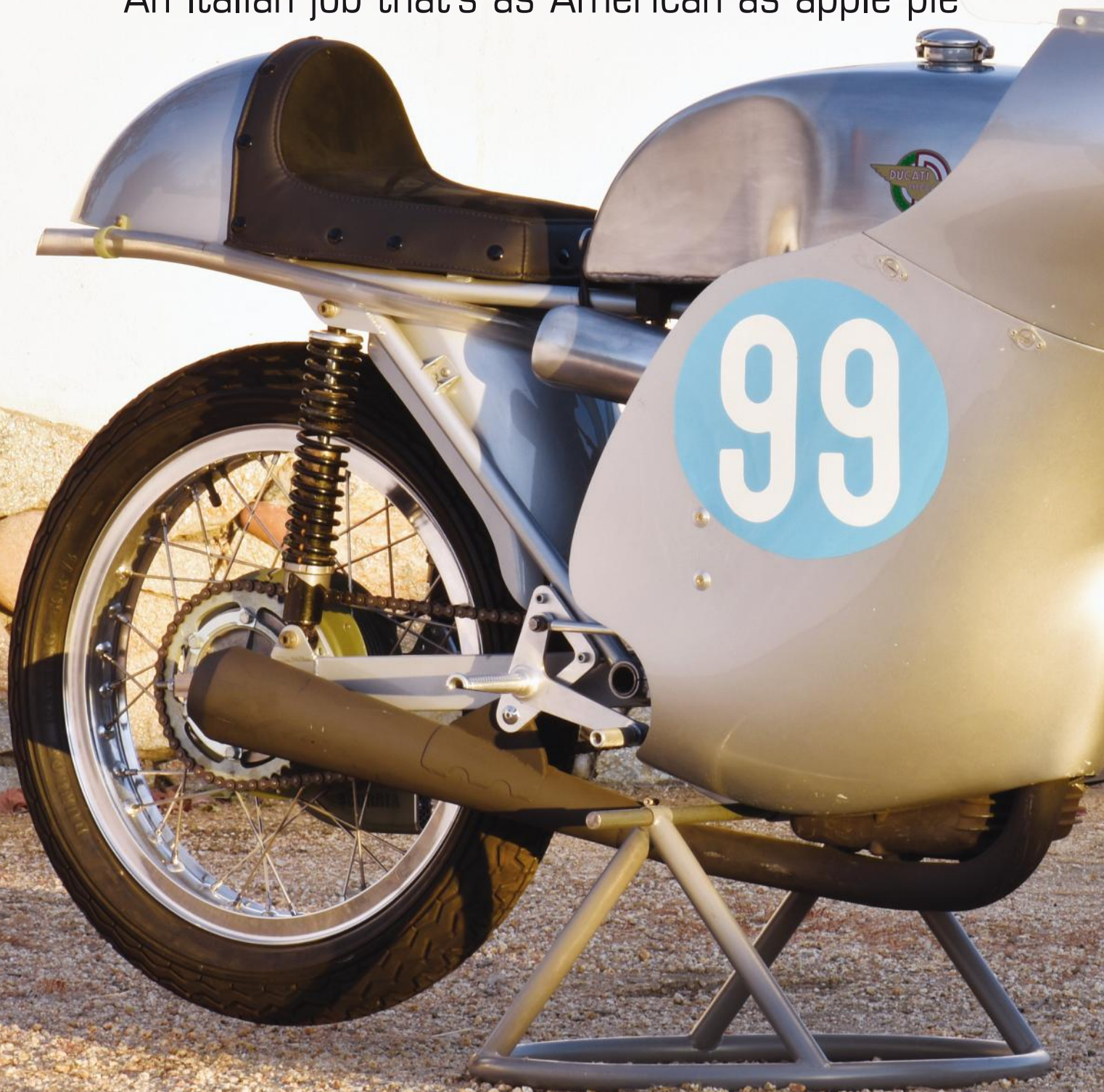
As with most early motorcycles, the bigger issue is stopping. “The problem is with the brakes — or the lack of them,” Green says. “The rear brake is a leather shoe against a ring attached to the spokes of the wheel. The front stirrup brake has pads that pull up against the rim like a turn-of-the-century bicycle. Traffic congestion wasn’t a concern before WWI.”

Of course, there was no title with the Ariel, and — like many other motorcycle restorers — Green found the most frustrating part of the recovery process was dealing with British Columbia’s provincial bureaucracy in order to get the Ariel registered for the street. Even so, he finds the finished motorcycle very rewarding. “She has been a worthwhile project, and a lot of fun since going back on the road in 1988,” Green concludes.

MC

1963 DUCATI 350

An Italian job that's as American as apple pie





Story and photos by Dain Gingerelli

Although most people don't know this, the first-ever Ducati 350 was made in America — by an American with an Italian surname.

Before this bike existed, there was no Ducati 350, and like the mongrelized Cadillac in the popular Johnny Cash song, it was built one piece at a time. Meet Frank Scurria and his Ducati 175-cum-200-cum-250-cum-350 that had its origins in a 125 F3 frame but eventually found a home in a modified 250 frame.

The pieces to this Italian-American puzzle have their origins in America's oldest motorcycle road race organization, the California-based AFM (American Federation of Motorcyclists). Among AFM racers in 1959 was a young Frank Scurria, who grew up in Glendale, California. Scurria began road racing his Ducati 200 when he was a teenager and like many young men then and now he was, as he puts it, "a California hot-rodder type who liked working on cars and motorcycles." Calling him a "hot-rodder type" is shortchanging his talents; Frank Scurria was, and still is, a gifted fabricator who also commands a firm grasp of engineering principles, two qualities that led to the development of his Ducati 350.

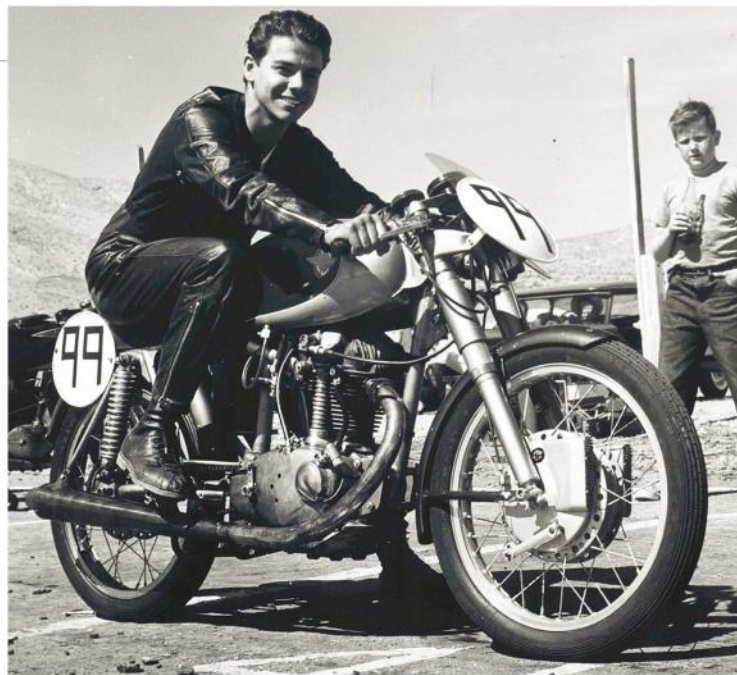
Scurria was a skillful road racer, and he campaigned his Ducati 200 with success. When he learned about a special stroker crankshaft developed by master machinist Allan d'Alo that boosted a Ducati 200's displacement closer to 250cc, Scurria wanted in. With an eye cast towards competing in the 250cc class, Scurria bought one of d'Alo's flywheel assemblies, and by the end of the 1961 season he was top dog in the AFM's quarter-liter ranks, winning the class championship.

Scurria didn't stop there, mapping out a plan to compete in the 350cc class that was ruled by guys riding Manx Nortons, AJS 7Rs and hot-rodded Honda Super Hawks. Initially he wanted to race his bored-and-stroked 200 (by now 247cc) against the 350s, but AFM rules disallowed undersize bikes in the larger classes, so Frank turned to his friend and sponsor, Bob Blair, owner of ZDS Motors in Glendale, for help. Blair supplied Scurria with an over-bore cylinder with matching piston that would bump the engine's displacement to 254cc. The legal engine worked: "I finished a close second in the 350 class behind an AJS 7R," recalls Scurria today. He was hooked, and the road to a full-on Ducati 350 suddenly got a little straighter.

Progress begins

"In late 1961 Ducati came out with an over-square 250 that had a bore of 74mm and the same 57.8mm stroke as the 175/200 bikes," Scurria explains. "The biggest bore I could have without making the cylinder liner too thin was 76 millimeters. With a bore of 76 millimeters and a stroke of 76, I would have a 344cc engine." Perfect for the 350 class!

"The obvious plus for a 350 Ducati was lighter weight than a 350 Manx or 7R," Scurria points out. Looking back, he speculates that the Duc weighed about 60-70 pounds less than the full-on 350s. "But I did foresee a few potential problems; the rod-length-to-stroke ratio could be considered marginal and could result in piston failure." Simply put, piston acceleration and speed was going to be



Frank Scurria aboard his Ducati 350 at Riverside Raceway's Turn 7 (left). Frank aboard another Duc at Willow Springs.

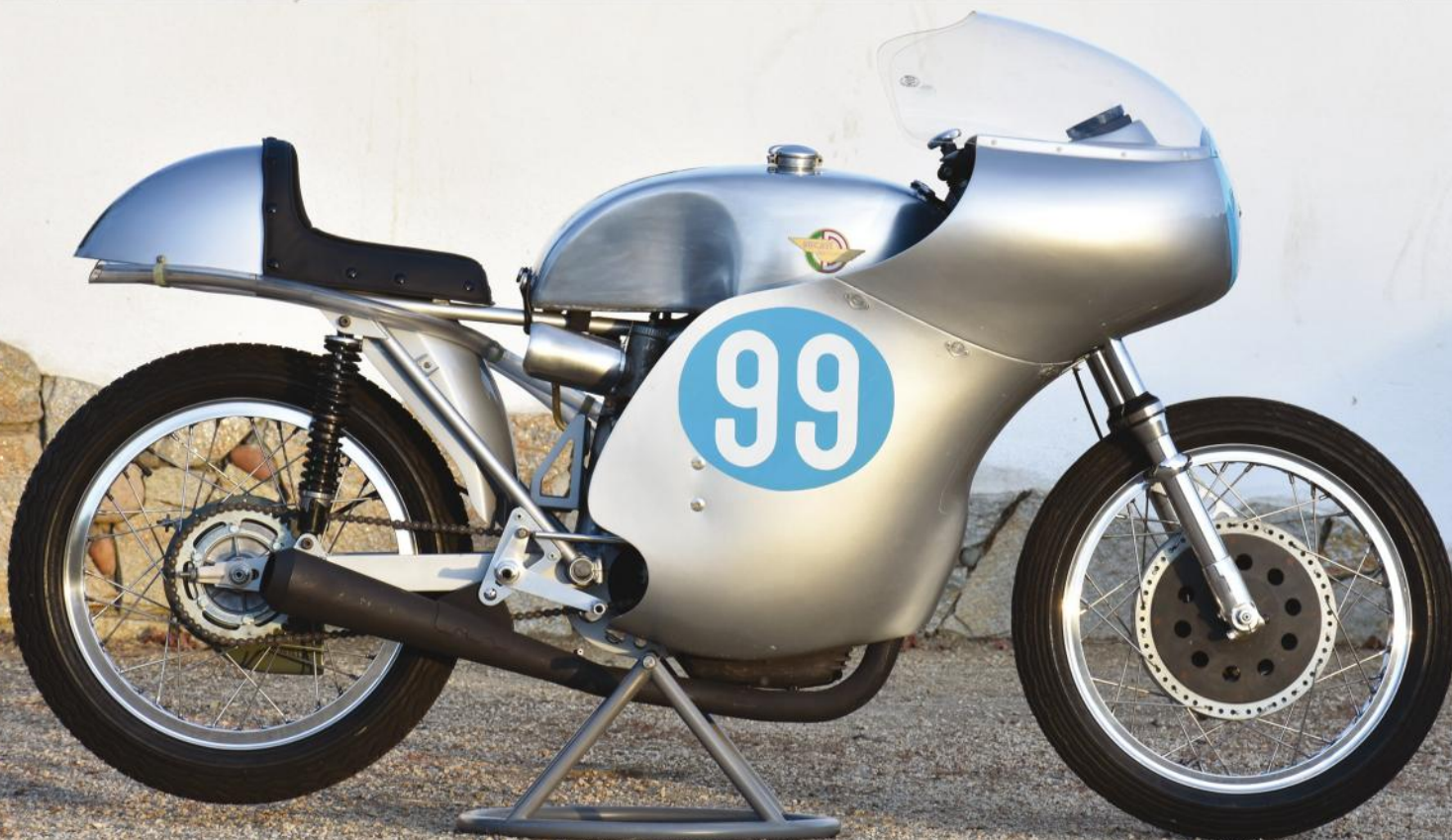
exceedingly high. There was also the issue of the Ducati's 4-speed transmission, originally intended for a 175cc engine. "I decided there would be no clutch-less or kill-switch gear changes," he remembers.

Scurria gave d'Alo specs for a stroker crank to push displacement to 344cc. To assure piston dome clearance, he inserted a 0.360-inch spacer plate beneath the bored-out cylinder. Blair also ordered a batch of 76mm pistons from Borgo Piston in Italy. "Unfortunately," Scurria says, "they were cast pistons, not forged, and there was a piston failure [later in the project's life]." More about that later.

Before assembly, Scurria visited master engine builder C.R. Axtell, who was among the first speed merchants in Los Angeles to have a flow bench for motorcycle engines. Axtell took one look

at the bare cylinder head's ports and told Scurria, "You can make this a little better, but you'll never make it really good," pointing out that there wasn't enough metal within the port area to do much sculpting to fully correct the problems.

Axtell made a few suggestions to improve flow, which Scurria followed to a T, weld-filling some areas so he could alter the port angle from 9 degrees to 3 degrees for improved flow. Axtell stressed that the important thing was to shape the port angle in relation to the valve, not the horizon. Scurria also fabricated a thick, wedge-shaped flange that tapers in two planes for the carburetor spigot mount so that a larger 32mm Dell'Orto SSI carburetor (and later an Amal GP2) would clear the frame tubes on the right side. He was careful not to remove much material from around the valve guides, to assure adequate support for the





valves at high rpm. Scurria recalls that he did a lot of handwork using riffler files to shape the port around the valve guide boss.

The intake valve was 1.59 inches (40.4mm) with a 7mm stem, and the exhaust 1.45 inches (36.8mm) with an 8mm stem. Art Sparks and Tim Witham, better known as S&W, provided the coil valve springs. Selecting a high-performance camshaft proved a problem because there really wasn't a clearing house for Ducati racing cams in 1962. After trying a modified cam set to F3 specs, Scurria received a gift from Blair: "Bob just walked up to me in the shop one day, handed me a cam and said it was for my 350 engine." It was the grind that led to the Ducati kit cam known later among racers as the Daytona Cam. It shared the F3's timing, but offered more lift.

He sandblasted the engine cases, cylinder and head before anodizing them black for improved heat transfer, and the new connecting rod was X-rayed, polished and shot peened. He ground off excess metal from the piston's underside for lightness, and he knife-edged the piston skirts to reduce drag on the cylinder wall. An internally tapered and lighter wrist pin from a 250 F3 further reduced weight. He set combustion chamber squish clearance at 0.038 inch. The compression ratio factored out to be 10.5:1.

Further engine weight was shed thanks to constant-loss battery ignition, which allowed for the stator and flywheel to be discarded. "Only the steel flywheel center was used, as a spacer for the crankshaft primary gear," Scurria explains. He also

drilled the engine mounting bolt holes to 0.375 inch to accept aircraft-grade 12-point bolts to help create a more rigid chassis.

Scurria also found himself navigating through uncharted waters when he selected an exhaust system for the 350. He experimented with pipe diameters from 1-5/8 inch to 1-3/4 inch, ultimately settling on a stepped pipe (and people today think that's a fairly new concept!), measuring 1-5/8 inch at the exhaust port, stepping up to 1-3/4 inch farther downstream. Header pipe length varied from 32 to 34 inches, but the real mystery

remained in the megaphone's shape. The Manx megaphone that he first tried was crowd-pleasing loud, but it created a flat spot through the mid-range engine speed. "The long megaphones seemed to work better than the shorter ones, the power was better," Scurria says, adding, "but the best one was the Axtell design; it's what's on the bike now."

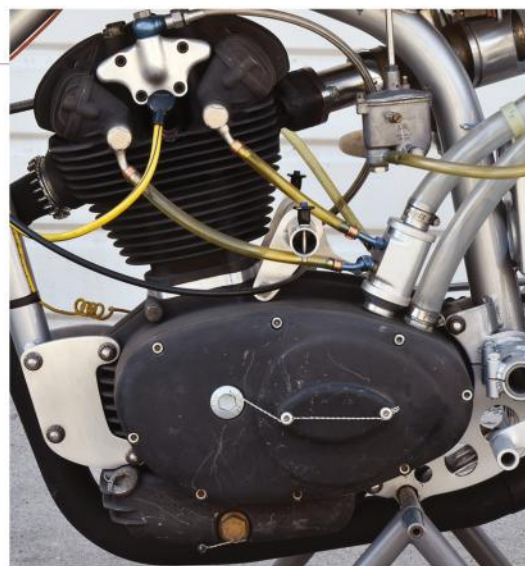
Time to race

Initial speed testing took place on the service road running adjacent to the Los Angeles River near Interstate 5 just down the block from ZDS Motors. "I could make a couple of high-speed passes and then scoot before the police came," admits a more mature (read: responsible) Frank Scurria today. "A small motorcycle running over 100mph and passing cars next to the freeway caused quite a few double takes. One was a CHP [California Highway Patrol] giving me a wide-eyed stare."

The bike proved fine, so Scurria packed it on the trailer for a trip to



Frank Scurria and his restored racer today.



Inside the engine is an original Kulan cam. The rear brake is based on a Ducati hub, but with a cooling air scoop (middle).

Willow Springs Raceway out in the Mojave Desert to do further testing. "In those days, Willow Springs was just 2.5 miles of race track in the middle of the desert, without fences or barriers. There wasn't anyone to stop us [from testing]."

Those early tests revealed weak brakes, so the 125 F3 frame Scurria was using was fitted with a large Amadoro four-shoe front brake, with a smaller Amadoro brake on the rear and 18-inch rims for both wheels. The first race proved how under-engineered the frame was for the "big" engine. A fellow competitor described the bike's wobbling and weaving as "a crash in progress that never quite made it all the way to the ground." Scurria agrees: "It seemed both wheels were never going in the same direction at the same time."

A re-think led to a second chassis based on a late-generation 250 F3 with Oldani brakes and 19-inch rims. "It was a little heavier than the 125 F3 chassis, but it handled so much better," reflects Scurria. "With this new chassis I could beat most of the 350 Hondas [CB77] and run with the best 7R and 350 Manx."

By now Scurria was a one-man R&D department. Buoyed by his progress he decided to up the ante, placing the crown jewel — the sweet-running 350cc engine — into an original 1961 Ducati 250 road frame that was "highly modified and much lighter." Only the frame's backbone, front down tube and steering head remained in stock configuration. Mods included repositioning the front down tube forward about 5/8 inch at the bottom and fabricating a complete rear section using 7/8-inch diameter, 0.065-inch wall 4130 chromoly tubing. Additional strength came from an all-new, one-off, rectangular cross-section swingarm. Despite the swingarm's massive size compared to stock, Scurria says it weighed about the same. It's also stiffer and about half an inch longer to improve weight distribution.

The swingarm pivot is 2-3/8 inches longer than stock, and constructed from machined 4130 chromoly tubing. "I didn't

have access to a TIG welder and didn't even know how to TIG weld, so I fabricated the steel parts, tacked them together with an oxyacetylene torch, and then took them to a welder a few miles from ZDS who finished the job with TIG welding," Scurria remembers.

All that hard work paid off. The frame, with swing arm, tips the scales 10 pounds less than a standard 250 F3 frame. Final suspension includes a 35mm Ceriani road race fork, 18-inch rims front and rear, and a 230mm Oldani front brake. The rear brake is based on a standard Ducati road hub, but with a cooling air scoop. Italian bike aficionados might notice how it resembles brakes found on many Grand Prix race bikes from the 1950s.

Finally, Scurria called on another early AFM stalwart, "Dirty" Dick Kilgroe, owner of Cupless Plastics, for the fairing. Kilgroe started with a Peel fairing — popular among road racers in those days — modifying it to fit the small Ducati frame. Peel fairings aren't as abundant today, so when Scurria began the bike's restoration a few years ago, he made a buck to form a similar fairing, then had AirTech (airtech-streamlining.com) in Vista, California, build the replica, which, by the way, is now in AirTech's regular catalog. Geoff Giammarco gets credit for the lustrous metallic silver paint job.

All of Scurria's original work paid off because the little Ducati, checking in dry at 217 pounds, proved competitive against the 350 field in 1963. The bike's first win happened during a two-day event at Willow Springs. The teeth on the clutch gear had sheared off during Saturday practice, prompting Scurria to return to his motel where he set up shop to disassemble the engine. By chance, members of Berliner, distributor for Ducati in the U.S., were in Southern California visiting ZDS Motors, and among the contingent of VIPs was Heinz Kegler, Berliner's Norton specialist. Kegler gladly switched hats for the day, donning one with a Ducati logo so



The fairing was built by AirTech, formed using a buck that Scurria made.



A friend of Frank's once called the bike an alley cat, not a thoroughbred. The name stuck and inspired the cat on the cowl.

he could help Scurria repair the engine. While Scurria tended to the engine's damaged internals, Kegler hustled back to Glendale to get replacement parts, including new primary gears.

"The driving gear at the end of the crankshaft was steel, but the driven gear, which is also part of the clutch housing, was made of cast iron," Scurria recalls. Cast iron proved to be the weak link.

After the all-nighter, Scurria and Kegler buttoned up the Ducati engine in time to make it to the grid for the 350 race. "The first win for a 350 Ducati anywhere in the world," Scurria proudly says, adding, "I wish I could say that I won the 1963 350-class championship, but no, I didn't." His Ducati was third in points behind a Honda and AJS. However, he looked towards 1964 with optimism. "Other than the primary-gear failure, there weren't any problems with reliability," Scurria says. "I started the 1964 season thinking I was riding a bulletproof bike."

Broken pistons

Early in the 1964 season the engine burst along Willow Spring's high-speed back straight. "At maximum revs [9,000 rpm] the top half of the piston came off at the pin, hit and bent both valves and ruined the valve guides. The cylinder had deep gouges in the liner from the piston pin, and the rod was bent." Worse, though, was the beautiful crankshaft, which had begun to separate from its flywheels. Party over.

Scurria's never been a quitter, and although he parked the Ducati 350 for good, he continued racing. "Because of the level of damage, unavailable parts and my move into the 500 class with a new Norton Manx, the engine was never rebuilt," Scurria says. Instead, it was disassembled, the engine parts stashed in boxes and the rolling chassis parked nearby until it eventually was sold.

However, customer inquiries to Berliners' headquarters in New Jersey about Ducati's "350" model showed that Scurria's project hadn't lost traction. Late in 1963, Mike Berliner called Bob Blair to ask about the Ducati 350 in California that everyone was talking about. Blair explained the situation, and Berliner promptly asked Scurria to send the kind folks at Ducati the specifications and other data for the engine.

"On Dec. 3, 1963, I sent drawings and all the specs of my bike to Dr. Giuseppe

Montano, thinking nothing would come of it," Scurria recalls. A week later, however, Dr. Montano replied, explaining that he was turning over Scurria's fact sheet to Ducati Studies Office for review. About a year later, Blair informed Scurria that Ducati was going to offer a 350cc model that was considerably like his 350.

California Dreamin'

In 1965 Ducati sent factory rider Franco Farne to race a 350cc prototype at Sebring, in Florida. The race included bikes with engine sizes ranging from 251cc to 700cc. The little Ducati finished 11th overall and first in class, and to celebrate the occasion, Ducati named the forthcoming production model the Sebring. By all rights, though, and with due respect to Signore Farne, the first-ever Ducati 350 should have been called the California, or something to that effect. For his foresight and efforts, Ducati promised Scurria that they'd supply him with a new 350cc racer. "It never arrived," Scurria says.

Even so, the story has a happy ending. In 2002 Scurria met Ducati parts specialist Steve Allen of Bevel Heaven (bevelheaven.com). Allen posted articles on his site about Scurria's Ducati past, including a request to readers who might know the whereabouts of Frank's old race bikes. A few years later someone responded, claiming to have an old Ducati that might be Scurria's. "When I saw what he had, I knew instantly it was the final 250 road frame," beams Scurria.

He obtained and restored the bike to its former glory. Although various components were missing, they've been replaced, including the Oldani front brake that a friend located in Italy. The engine is a runner, right down to the Kulan camshaft, which happens to be the first cam that Blair passed along to Scurria for the project. And that alloy gas tank? It's not original, but it resembles the first one. And more to the point, the replacement was fabricated by Scurria.

The restored racer appears occasionally at bike shows. Beautiful in every way, it's an important machine, worthy of appreciation for its unique place in Ducati history, a special that inspired a factory model. As Scurria says, "We weren't trained engineers, just California hot rodders. But we didn't know what we couldn't do, so we just did it." **MC**



The paint job on the restored bike was done by Geoff Giammarco, cat and all.

ROTARY REVIVAL

Van Veen OCR 1000

Story by Alan Cathcart
Photos by Kyoichi Nakamura

A quarter of a century ago, rotary-engined motorcycles seemed set to be the next big thing.

In 1992, the Norton RC588 scored a Wankel-engined bike's greatest victory by winning the Senior TT in the Isle of Man in the hands of the late Steve Hislop at a then-record speed of 121.38mph, after a thrilling battle with future four-time World Superbike champion Carl Fogarty's Yamaha. Coupled with the Duckhams Norton team's domination of the 1994 British Superbike championship, with riders Ian Simpson and Phil Borley finishing 1-2 in the points table, Norton might have expected to benefit from this win with a spike in demand for its F1 Sport race replica street bike — but the indebted British company was sliding towards insolvency, and production of the last Wankel-engined motorcycle money could buy ended. Until now.

OCR Motors owner Andries Wielinga is bringing the past to life again by building the OCR 1000 (ocrmotors.com). In the 1970s, Dutch two-wheeled tycoon Hendrik “Henk” Van Veen produced what was then the most high-performance (and most expensive) series-production street bike money could buy, powered by the same 100-horsepower twin-rotor engine used in the NSU Ro80, the world's first production rotary-engined car. Van Veen sold 38 examples of the original OCR 1000 at a retail price equivalent to €40,000 today (about \$47,000) before the company closed down in 1981. The bike was in every way symptomatic of the age of excess — which makes Wielinga's decision to build 10 exact replicas of the late-1970s production Van Veen OCR Rotary retailing at €85,000 (\$100,000)

either a very brave or a very foolish decision, depending on which way you look at it!

Little to big

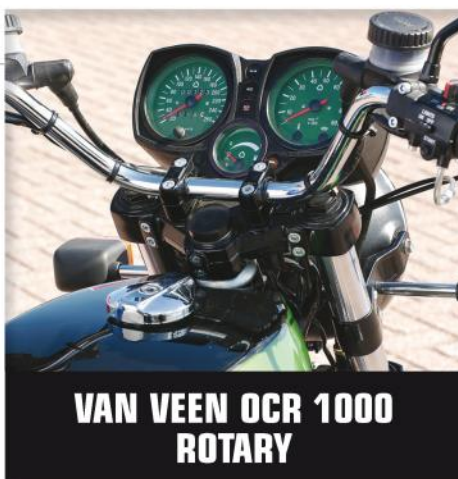
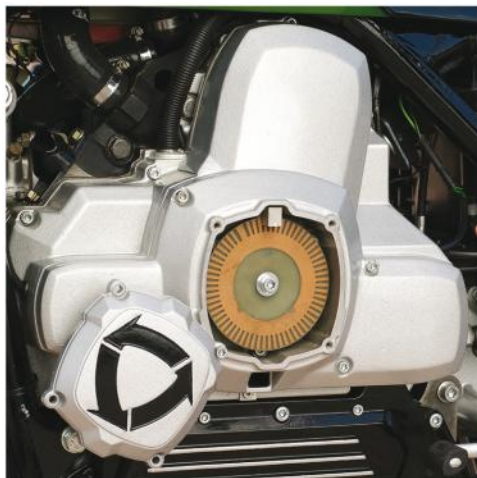
Van Veen's eponymous company imported Kreidler 50cc mopeds and minibikes to the Netherlands from Germany in huge volume during the 1960s and 1970s — Dutch sales of Kridlers passed the 100,000 mark in 1971. Because of that, he was able to go Grand Prix racing in the 50cc “tiddler” category with his own specially developed Van Veen Kridlers, and see his riders win four World championships, starting with Jan de Vries in 1971.

But that very same year, Van Veen had gone from little to big in taking the first steps towards establishing his own series-production motorcycle brand. He did so by creating a 100 horsepower prototype road bike featuring a 1,000cc Mazda Cosmo rotary engine shoehorned into a Moto Guzzi V7 frame, still with shaft final drive. Although the result was challenged aesthetically, its performance was impressive by the standards of the era. One hundred horsepower was a lot back then — the newly launched Kawasaki Z1 made “only” 82 horsepower — so Van Veen decided to put a high performance rotary bike into production using the NSU engine manufactured by Comotor.

To do so, he gave the job of designing it to one of his GP riders, 24-year-old Jos Schurgers. Schurgers finished third in the 50cc World Championship in 1971 on a Van Veen Kreidler before repeating the placing in the 1973 125cc World series on his self-built Bridgestone twin, which was an amalgam of parts from the Japanese firm's 175cc Dual Twin road bike and the Van Veen Kreidler singles. Schurgers managed to achieve all this in between creating the rotary-engined Van Veen OCR 1000 (standing for Oil-Cooled Rotors) with the help of British designer Simon Saunders —







VAN VEEN OCR 1000 ROTARY

better known today as the proprietor of the Ariel Car Company (arielmotor.co.uk), which also produces its own highly innovative motorcycle design, the Honda-powered Ariel Ace V4. The result made its debut at the Cologne Show in October 1974.

Henk Van Veen moved forward, establishing a factory to manufacture the OCR 1000 in his key potential market for such a bike, West Germany. This was located at Duderstadt, and in 1976 a select few journalists were invited to ride the pre-production version of the bike. It had a remarkable specification for its time, with 100.4 horsepower delivered at 6,500rpm by the twin-rotor engine, measuring 996cc in terms of the

Engine: Transverse-mounted twin-rotor Wankel rotary with wet sump oil-cooled rotors and water-cooled casing, 2 x 498cc swept volume trochoidal chambers, 996cc, 9:1 compression ratio, 100.4hp at 6,500 rpm (at rear wheel)

Top speed: 135mph (claimed)

Carburetion: 32mm Solex with accelerator pump and automatic choke

Transmission: 4-speed, shaft final drive

Electrics: 12v, electronic ignition

Frame/wheelbase: Dual downtube steel cradle/61in (1,550mm)

Suspension: 42mm telescopic fork front, twin shocks w/adjustable preload and damping rear

Brakes: Dual 11in (280mm) Brembo discs front, single 11in (280mm) Brembo disc rear

Tires: 110/90 x 18in front, 130/80 x 18in rear

Weight (dry): 642lb (292kg)

Seat height: 33.5in (850mm)

Fuel capacity: 6.35gal (24ltr)

Price: €85,000 (\$100,000)

The shaft drive is integrated into the right side of the swingarm (above).

swept volume of the trochoidal rotor chambers.

Sourced from Comotor, the engine was essentially a joint-venture project between rotary pioneers NSU and avant-garde thinkers Citroën, who installed it in their Birotor GS model — but an agreement was made to supply the engine in batches of 50 to Van Veen. Installed in the OCR 1000, the twin-rotor engine already delivered 60 horsepower at just 3,000rpm, and in spite of a 642-pound dry weight, performance was impressive, with 0-60mph acceleration in just 3.5 seconds, and a top speed of 139mph. However, complaints





from outside testers about poor throttle response, a flawed gear change and ineffective brakes saw Van Veen forced to delay production while these issues were addressed.

But addressed they were, and one year later in 1977 production of the Van Veen OCR 1000 got underway. Unfortunately, after just a handful of bikes had been constructed and delivered to eager, well-heeled customers using the first batch of 50 engines supplied from Luxembourg, production of the engine stopped, and Comotor folded soon after. Van Veen staggered on with production, with the final original OCR 1000 of the 38 built completed in 1981, before everything ground to a halt and the factory closed.

Time flies

But 40 years later, the Van Veen ultra-bike is back in production, thanks partly to Dutch rotary-engine enthusiast Ger Van Rootselaar, who purchased the entire stock of unassembled parts from Van Veen when the factory shut down. From these, he assembled Van Veen OCR 1000 No. 39 for himself, but had no intention of doing anything more until he met up with Andries Wielinga,

based in the nearby north Holland town of Wommels, and a restorer of classic Citroën cars — including of course the very rare GS Birotor.

"I've rebuilt two of these so far, and

their technology was very interesting," Andries says. "I ride bikes on the road, so when Ger Van Rootselaar decided he wanted to sell his Van Veen OCR parts because they were just sitting there gath-

ering dust, he had two people who wanted to buy them, one German and one English. But he realized that if he sold them that would be the end of him ever making any new bikes himself — so he came to see me and we got talking. We agreed that I'd buy the parts from him, and he'd build the engines for me. That was in 2009, and that's how it all started. Since then we've digitalized the original drawings, and built up a complete parts stock to build 10 motorcycles, using in most cases the original suppliers. I'm making the exact same bike from 40 years ago, with all the original parts just as Van Veen made them back then. We tracked down every small part supplier. We wanted to make a completely authentic original bike, and even if some of them took half a year to track down, we managed to find all the parts to do so, except for the tubular steel frame, which is made by Nico Bakker to exactly the same design as the original, and of course the tires, which are Michelin



The non-adjustable 42mm Van Veen forks use Koni internals, just like the original.



Original-style taillight is mounted to the rear seat cowl. A large battery — and lots of relays — live under the flip-up seat.

Macadam. Otherwise, this bike is history on wheels — but brand new!”

I suppose from that point of view the born-again Van Veen OCR 1000 isn't so much a replica, as the continuation of production 40 years down the line, with mostly original period parts acquired as part of the factory clear-out, even down to the Ronal cast aluminum wheels made by a Mercedes-Benz/BMW car supplier.

Then and now

The “new” OCR 1000 is available in just one paint scheme, the original black-and-green livery. Delivery time is three months from the customer placing an order, and the price includes a 2-year, unlimited mileage warranty. Just 10 bikes will be built — four of which have already found customers — reflecting the number of engines held in stock. The Comotor twin-rotor engine fitted to the bike, with wet sump lubrication for the oil-cooled rotors and a water-cooled engine casing — hence the large radiator — is built up by Ger Van Rootselaar with uprated rotor tip seals, reflecting Mazda's successful resolution of this single-most contentious rotary engine issue. In keeping with the caliber — and the price tag — of the motorcycle, the 4-speed gearbox with gear primary, shaft final drive and a dry twin-plate diaphragm clutch with hydraulic operation was developed and manufactured for Van Veen by Porsche.

The chance to spend an afternoon riding this back-to-the-future bike revealed an

enticing blend of old and new that in some ways was nevertheless rather frustrating. I've ridden lots of rotaries down the years, mostly Nortons, and while the engine's visual appearance often turns off traditionally minded bikers, I must admit to being seduced by the Wankel engine's smooth running, compact build, and broad, rideable spread of power. Thumb the starter button to fire up the OCR, and the twin-rotor engine bursts immediately into life via the twin-choke

Solex carb's automatic cold start setting, before settling to a fast-sounding but totally vibration-free 1,300rpm idle, accompanied by the trademark offbeat rotary burble that's halfway between a 2-stroke's high-pitched crack and a 4-stroke's deeper rumble — call it a 3-stroke!

Having ridden a 588cc twin-rotor Norton Rotary street bike I was unprepared for the depths of performance delivered by the Van Veen's engine, with almost twice the capacity and practically double the rate of acceleration of the Norton, in spite of its heavy weight. Notch bottom gear on the left-foot shifter and the OCR pulls smoothly away from just off idle. Wide-open acceleration from 2,000rpm upwards is impressive, without any risk of lifting the front wheel thanks to the long 61-inch (1,550mm) wheelbase, and also the fact the heavy engine (because of the cast iron rotors) is carried way low in the bike. The Comotor engine runs hard and fast, with a totally seamless power delivery toward the 6,500rpm redline — and beyond!

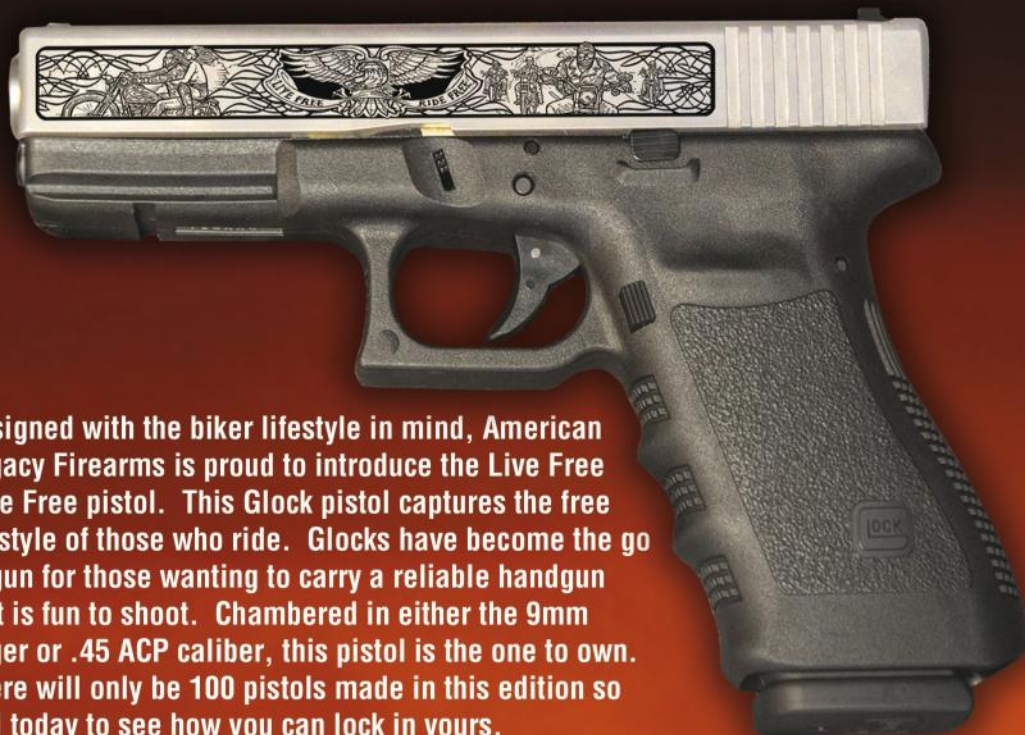
There's no built-in rev limiter on the Bosch/Hardig CDI, and perhaps there should be, because several times I realized with a start that I'd been seduced by the smooth-running engine to send the tachometer needle beyond the 7,000rpm mark. That means this thoroughly modern engine is a delight to use, with waves of grunt just waiting for you each time you change gear to propel the revs back towards the red zone again. With the



The large radiator at the front keeps the 996cc twin-rotor Wankel rotary engine cool.

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100mph mark showing on the speedo at just 4,200rpm, and 60mph smooth running at just 2,500rpm, both in top gear, the rotary engine has serious reserves of performance that is fun to exploit — but without the slightest undue vibration at any time.

Thanks to that fabulous engine, this is a very untiring bike to ride hard, in spite of its heavy weight and large capacity. The gear change is OK by shaftie standards, though there's a clunk when changing from first to second through neutral, which is however easy to find at rest. And the hydraulic-operated diaphragm clutch is easy and precise to use, if not quite as light-action as I'd expected.

The OCR's riding stance is very 1970s, upright but pretty comfortable until you get much over 85mph, when you start to struggle to hold on. The location of the right footrest is annoying, though — the clutch housing protrudes into your ankle bone, which means you can't reach the rear brake pedal properly, and also can't park your toes on the footrest. And without much engine braking to speak of, you

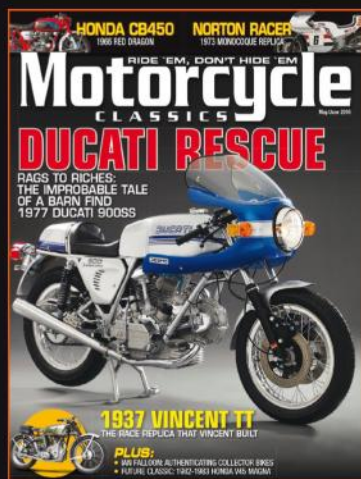
do have to use both front and rear brakes very hard to stop. Really, the brakes fitted to the OCR aren't up to arresting the significant performance of such a fast, heavy bike.

Suspension compliance is also an issue. Konis were the hot tip in the twin-shock era, and while the Bakker frame steers as well as Nico's creations always do, in spite of that long wheelbase and the rangy 29-degree fork rake, the rear suspension feels way over-sprung, probably in order to counter the torque and the substantial weight transfer under hard acceleration with such a heavy bike. The relatively primitive 42mm Van Veen period forks with Koni internals and zero damping adjustment feel very stiff and not very compliant — they don't like bumps much, though the hefty weight of the bike as a whole helps settle any chatter before it gets out of hand. But you can't really feel what the front Michelin tire is doing, and this is pretty important with an expensive bike you need to bring home in one piece, especially with the skinny 18-inch tires and all that weight.

Wrong turn?

I can't help thinking Andries Wiesinga has missed an opportunity here. Nowadays, a bike like this with such a fabulous high-performance engine deserves much better suspension and brakes to allow you to exploit that performance in safety, and he should fit modern Öhlins forks and Brembo radial brakes to the OCR 1000 to let his customers do so — especially at that price! Instead, you must exploit the thoroughly modern performance of that crown jewel of an engine via period handling hardware that's not up to scratch, and that's a pity.

Reproducing the bike in original guise is one thing, but to include all the period drawbacks when they're easily resolvable is a mistake. My test confirmed that the OCR was way ahead of its time in terms of concept and performance, but the old-school brakes and suspension stop you enjoying the fruits of that. Maybe Andries Wielinga will listen, and get the message ... Log on to ocrmotors.com to find out! **MC**



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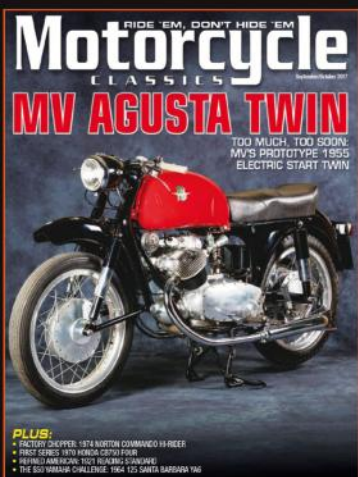
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THE MODERN FOUR

1967 MV Agusta 600

Story and photos by Adil Jal Darukhanawala

When MV Agusta, one of the greatest names in motorcycle racing, decided to make a 4-cylinder road bike based on its success with Grand Prix racing, it did all it could to deter owners from racing it. That says a lot about what was fermenting in Count Domenico Agusta's mind when he set his engineers to work preparing what would be the first modern Superbike, before the term was even coined.

The bike featured here is the actual, very first road-going 4-cylinder motorcycle to roll off the assembly lines at Meccanica Verghera Agusta's facility not far from Milan, Italy. Although most of us know the brand more for its racing than its road bikes, if history had been kind, the marketplace of two-wheelers, and especially scooters, would have been very different.

MV early days

Costruzioni Aeronautiche Giovanni Agusta was founded by Count Giovanni Agusta in 1923 as an aircraft manufacturer. It was a natural choice, as Count Agusta was one of the earliest exponents of the aviation world after the Wright brothers, and in fact had taken to the skies before the likes of the French ace Louis Blériot. Count Agusta had seen action in World War I when he was part of the Malpensa Air Battalion and it was near there, in Varese, that he set up his aircraft construction business.

He died early though, in 1927, at age 48, but his widowed wife, the Countess Giuseppina, and eldest son Domenico took charge. In the closing years of World War II, the Agustas knew, as did many others, that they would have to set their factories work-

ing on things other than aircraft, especially for the fighting forces. Personal mobility was the overarching theme that dominated, so in 1943 and early 1944 Count Domenico Agusta and his team prepared a 98cc big-wheeled moped-like contraption they called the Vespa (Wasp) 98. It was advertised in a few Italian trade journals before it was realized that another Italian aviation firm, Piaggio, had registered that very name for a mass mobility two-wheeler that embraced aviation construction techniques, also with a small 98cc engine.

The first five years of MV's motorcycle manufacturing activities were all about delivering mass mobility, offering small 2-stroke scooters and motorcycles in displacement sizes ranging from 98cc to 250cc. Although well received, they were also more expensive than the competition so sales were always lower than the established giants like Moto Guzzi and Gilera. However, Count Agusta was never shy of going that extra mile when it came to technological innovation or flair, and his avowed zeal to always build in the *coup de théâtre* meant that MVs were forever seen at the cutting edge of motorcycle technology.

The biggest thrust to MV's fortunes







came with the formation of the World Championships in 1949. In those days, World Championship titles were fought in the 125cc, 250cc, 350cc, 500cc and 600cc sidecar classes. This gave an overwhelming impetus to all bike makers to be in these racing series, where wins brought glory that transferred to the showroom. By this time, 2-strokes were beginning to be seriously threatened by 4-strokes, especially in the smaller classes where 2-strokes dominated, so MV had no option but to hedge its bets by beginning to develop 4-stroke motorcycles, as well.

To ensure top notch 4-stroke engine technology, Count Agusta invested in two of the best known names in Italian automobile race engineering — Professor Mario Speluzzi of the Polytechnic University of Milan and Pietro Remor, who had designed the Gilera Rondine, the supercharged, water-cooled 500cc 4-cylinder Grand Prix motorcycle of the late 1930s (see Page 12). Prof. Speluzzi had impeccable credentials as well, as a builder of supercharged speedboat engines and

then a special engine for Maserati in GP racing, and the two of them set MV on the road to 4-stroke motorcycling glory.

MV's first four

On Dec. 3, 1950, MV Agusta took the wraps off its road-going 500 Grand Turismo R19 at the Milan Motorcycle Show. It was a staggering machine,

beautifully constructed and dazzling to behold. Finished in silver gray, it embraced a light alloy, 4-cylinder, twin overhead camshaft engine fed by twin Dell'Orto carburetors with a wet clutch and 4-speed gearbox in unit, with shaft final drive. Housed in a duplex cradle frame, it was exceedingly well finished. The tachometer and speedometer were

(1) MOTOCICLO - MOTOCARROZZETTA
per trasporto di persone ad uso privato (2)

Fabbrica e tipo M.V. ue 6 - 199 Telaio n. 199001

Anno di prima immatricolazione 1957 di fabbricazione nazionale (3)

MOTOVEICOLO (1) nuovo di fabbrica - usato già immatricolato con targa

Modello del motore ue 6 199 Combust. (4) B Tempi 4 Cilindri 4 Diam. 58 Corsa 56

Cilindrata totale cm³ 591.8 POTENZA FISCALE (5): CV 9

Potenza massima: 48.5 Giri (6) n/1' 7600 Cambio a 5 marce (1) con-senza retromarcia

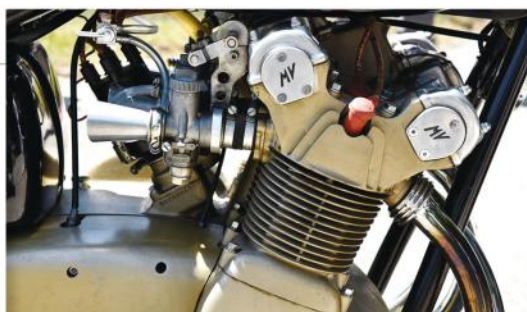
Posti totali (7) n. 2 Carrozzeria Passo m. 1.37

Pneumatici (8) anteriori 7.50 x 18 posteriori 10.00 x 18 Freni (1) serv. mecc. idr. staz. mecc. idr. Silenz. Aspiraz. IGM. Scarico IGM. 88 Decibel

Dispositivi di illuminazione, di segnalazione visiva ed acustica, silenziatore: Regolamentari.

Annotazioni: Autobus 1252 del 12.6.57 Pros Milano
fig. cubipolo di opprob. IVA 44480 del 27.5.67
11.7.1957

The original bill of sale, which notes the 199001 frame number at top right.



1967 MV AGUSTA 600 FOUR

Engine: 592cc air-cooled DOHC inline four, 58mm x 56mm bore and stroke, 9.3:1 compression ratio, 50hp @ 8,200rpm
Top speed: 99.3mph (period test)
Carburetion: Two 24mm Dell'Orto MB24
Transmission: 5-speed, shaft final drive
Electrics: 12v, distributor ignition w/coil and breaker points
Frame/wheelbase: Dual downtube steel cradle/54.7in (1,390mm)
Suspension: Telescopic fork front, twin shocks w/adjustable preload rear
Brakes: Dual 8.5in (216mm) mechanically actuated discs front, 7.9in (200mm) SLS drum rear
Tires: 3.5 x 18in front, 4 x 18in rear
Weight (dry): 486lb (221kg)
Seat height: 31.6in (802mm)
Fuel capacity: 5.3gal (20ltr)
Price then: \$1,698 (1,060,000 lire)

premier class, it couldn't emulate its smaller siblings in the way of World Championships until the great John Surtees landed MV its first premier class world title in 1956. From then on the glorious red and silver "fire engines" dominated the 500cc and the 350cc classes until Honda began to make things difficult in the mid-1960s. It was during the Japanese onslaught of motorcycle sales in Europe and the U.S. in the first half of the 1960s that Count Agusta again began to think about his shock and awe approach to creating high-performance motorcycles for the road in line with its winning Grand Prix lineage.

Count Agusta's vision was a grand touring motorcycle that would adopt most of the elements of MV's Grand

both mounted in the gas tank. The swingarm was also a work of art, with twin spars on both sides working on torsion bars and friction dampers while telescopic forks did duty up front. The bike ran on 19-inch wheels front and rear, with a ventilated 9-inch (230mm) twin-leading-shoe drum at the front and an 8.7-inch (220mm) at the rear.

The 500 Grand Turismo made extensive use of exotic materials, with the engine said to weigh the same as a contemporary 500cc single.

Earlier in the year, MV had shown off its first 500cc 4-cylinder Grand Prix motorcycle and this road-going version borrowed massively from it. Priced at 950,000 lire (approximately \$1,521 U.S.), it was never produced, despite great interest from potential buyers. It

survives today in the Agusta Museum in Gallarate, Italy (museoagusta.it).

Birth of the 600 four

Although MV did win a smattering of Grand Prix races in the 500cc





The engine number, 199001, is clearly marked (above). The engine details show the stunning original condition of the bike.



Prix World Championship-winning motorcycles, but it would not be a fire-breathing version that customers could take to the track. What he wanted was a two-wheeled equivalent of the glorious Ferrari 275 GTB and its like.

To prevent clients from buying the bike to race, he ordered his design and engineering teams to give his proposed street 4-cylinder a displacement of 600cc, putting it into no man's land as far as racing classifications. He also specified shaft drive, which uses more power than a chain.

The engine used the same architecture as the engines that powered the likes of John Surtees, Gary Hocking,

Mike Hailwood and Giacomo Agostini to win after win and World Championship after World Championship. The prototype featured a bore and stroke of 56mm x 60mm for a 592cc displacement, but this long-stroke layout gave way to a shorter stroke version with a bore and stroke of 58mm x 56mm to give the same 592cc capacity. This was the layout adopted for production.

The light alloy, double overhead cam engine breathed through a quartet of Dell'Orto MB24 carbs and featured wet sump lubrication and a 5-speed gearbox that drove the final drive shaft via bevel gears.

The bikes were virtually hand built, and it showed in the absolute craftsmanship. The crank-driven cluster of timing gears for the twin overhead cams was a joy to behold, while the crank itself was elaborately built of

five main parts and ran on six roller bearings. The two outer bearings were conventional, but MV Agusta probably broke new ground with the other four by employing the cracked manufacturing approach to get a perfect fit. In that process the ball races are machined, ground and treated in one piece, then broken into two in such a way that the fracture, though irregular, is unique yet perfect for each fit. Although the process sounds irregular, it simplifies crankshaft/crankcase assembly. This approach is used today for connecting rod big ends on high-end BMW and other sports cars.

Probably the weakest link in the MV 600's engine was its electrics, but then this could perhaps be said to hold true across the board for all Italian cars and bikes of that period. Ignition was by breaker points distributor and coil in conjunction with a 12-volt, 135-watt generator that also doubled as the starter. To overcome the generator's inherent deficiencies, MV's engineers adopted a special twin-belt drive system; a low-gear belt for starter motor duty and a higher geared belt for the generator.

The engine was housed in a duplex cradle frame that was also clearly inspired by MV's Grand Prix racing, albeit slightly enhanced to take care of road-going requirements and the bike's extra weight. The front Teledraulic forks and the two rear hydraulic shock absorber working with a sturdy swing-arm made up the suspension components. Top-notch Borrani 3.25 x 18-inch light alloy wire wheels were used, an inch smaller in diameter than those adopted for the first 500 four from 1950, and shod with a 3.5 x 18-inch tire at the front with a 4 x 18-inch on the rear.

One of the 600's most modern elements was MV's adoption of two mechanically actuated Campagnolo



Owner Jean Marie Marechal and companion aboard the 600 near Lake Como, Italy.

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8.5-inch (216mm) diameter disc brakes on the front wheel. This was truly an industry first, and MV had already tested them in competition on their 125cc Grand Prix machine. They seemed to work adequately well given the performance potential plus the 486-pound (221 kilogram) dry weight of the bike. Interestingly, the models that followed the 600, which came in much sportier and larger engined attire, adopted twin-leading-shoe drum brakes on the front, and it wasn't until the 750 Sport America appeared in 1975 that twin 11-inch (280mm) diameter hydraulic disc brakes made their appearance on the big MV road-going fours.

As much as the quality of the mechanicals and the cycle parts — plus the obvious inherent sporty performance — were obvious, the styling was quirky, to say the least. This was due to Count Agusta's stern dictate that the designers follow his every directive, including the large rectangular headlight, smallish pannier boxes on either side of the passenger seat and that humpback fuel tank. That aside, the bike was sensational — but pricey — and it was to lay the template for all inline 4-cylinder motorcycles to follow from there on.

The first 600

The bike featured here belongs to Jean Marie Marechal, whom I first met at the 2016 Concorso d'Eleganza Villa d'Este, held on the shores of Lake Como, Italy. It is no ordinary 600, but the very first 600 four off the factory line and features matched chassis and engine numbers — 199001 — to prove it. Marechal lives and breathes MVs, and has fond memories of see-

"The fact that he rode to Villa d'Este for the concours certifies him as an absolute MV nutter engrossed in the firm's mystique."

ing the fire-engine-red bikes race and win in the hands of Surtees, Hailwood, Agostini and Read. He has everything that a dedicated MV anorak would have along with this historic bit of art on two wheels, including the original bill of sale, signed by Count Domenico Agusta himself.

Examining the 600 at Villa d'Este, I

could see it was one of motorcycling's Holy Grails. Marechal is full of enthusiasm for motorcycles and MVs, and he gladly fired up the bike for me the evening preceding the concours main event. He also spent time showing me his collection of memorabilia that he carried with him. The 600 has its original number plates, untouched tools in the original tool kit, original keys with the original leather key holder, and more. The fact that he rode to Villa d'Este for the concours certifies him as an absolute MV nutter engrossed in the firm's mystique.

MV Agusta built just 127 examples of the 600, and total production of all 4-cylinder bikes (including the Sport, GT, 750 Sport and 750 S America) to 1977 just nudged 1,200. MV Agusta closed its doors in 1977, and all remaining stock was sold off by 1980, bringing to an end what was one of the most glorious motorcycle marques, with a strong racing pedigree and immensely long list of successes, with 270 Grand Prix victories, 37 Constructors World Championships and 38 Riders' World Championship titles.

In absolutely original condition, Marechal's 600-4 is truly one of a kind.

MC

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Moto-scribe extraordinaire Alan Cathcart aboard the Triumph 200cc 2-stroke twin near the Sammy Miller Museum in New Milton, Hampshire, U.K.



OVERLOOKED OPPORTUNITY

Triumph 200cc 2-stroke twin prototype

Story by Alan Cathcart Photos by Kel Edge

In 1957, Triumph's chief engineer and later CEO Edward Turner ordered his R&D team at Triumph's Meriden factory to chuck a prototype engine they'd been working on into the bin.

Fortunately, the development guys didn't scrap it, and the result is today on display at the Sammy Miller Museum (sammymler.co.uk) for all to see and hear in action, having been restored to running order 20 years ago, after Miller acquired it in 1995 as just a prototype engine — one unlike any other in Triumph's postwar lineup — and frame.

So what was it? In 1956, the year after Yamaha's motorcycle division was founded and by which Suzuki had been making small single-cylinder bikes for just three short years, Turner decided to have his Triumph design team build an experimental 200cc 2-cylinder 2-stroke engine of the exact same type that would propel the products of Japan Inc. to worldwide supremacy in the coming years. Well, except for Honda.

Turner was interested in using the engine in the Triumph Tigress scooter, due to be launched in 1958 as the BSA Group's entry into the then-booming scooter market dominated by the Italian Vespa and Lambretta 2-stroke singles. In the end, the Tigress and its badge-engineered BSA Sunbeam sister were powered by either a 10-horsepower 249cc 4-stroke 2-cylinder engine or a 7.5-horsepower 173cc 2-stroke single, both of them air-cooled. The 2-stroke was a development of the BSA Bantam engine, but the 4-stroke was a completely new parallel-twin with gear rather than chain drive to the gearbox.

Two-stroke twin

The new Triumph 2-stroke engine was an air-cooled parallel-twin with reed-valve induction directly into the crankcase via a single Amal Monobloc carbure-

tor, and a one-up/one-down 180-degree crankshaft. It had both cylinders cast together in one piece, as was the cylinder head, and there was a belt primary drive with the pulleys running on needle rollers, which replaced the chain primary used on all Triumphs to date, necessary for scooter use. Supposedly, much of the design was copied from the Evinrude Chore Horse, a rugged and very popular American engine that originated in 1935 to power washing machines, generators, pumps and lawn mowers.

Supposedly, another reason for the engine's creation was that Turner

"Turner was interested in using the engine in the Triumph Tigress Scooter to be launched in 1958."

was considering teaming up with Bill Johnson, CEO of Johnson Motors in Los Angeles, Triumph's West Coast U.S. importers since 1944, to enter the fast-growing American personal water sports market. The thought that it might form the basis of a new range of lightweight motorcycles, perhaps replacing the Tiger Cub that had been introduced in 150cc guise in 1954, and would shortly increase in capacity to the same 200cc capacity as the 2-stroke prototype motor for 1957, strangely doesn't seem to have been a key priority.

However, in building the prototype engine, Triumph engineers needed a cover for the Lucas alternator that provided current for lighting, as well as powering the 6-volt battery/coil ignition.

Development fitter Dennis Austin was sent off to the kitchen section of Leeke's department store in Coventry clutching a Lucas RM13 stator, with orders not to return until he had found something suitable to cover it with. He returned to Meriden some time later with a saucepan that was apparently an exact fit for the stator, and after the top and handle were removed and two Tiger Cub engine mounting lugs welded on, the bottom was cut out and the cover thus fabricated. Job done!

The prototype 200cc 2-stroke engine was then apparently run for some time in a water tank, where it was tested for power output. Initially it ran well, but as the test hours built up, performance fell away. Different reed valves, exhausts and inlet tract lengths were all tried, but to no avail — until it was eventually discovered that the cylinder liners had been

slowly rotating until the inlet and exhaust ports were almost completely shrouded! The liners were pegged in place to resolve this, and testing resumed, but power output was disappointing, although designer Turner apparently disputed the test findings.

John Nelson, who was in charge of Triumph's development shop from 1947 to 1956, bolted the engine into a modified Tiger Cub frame with a 4-speed Cub gearbox and dry 6-plate clutch attached to it, initially via a conventional chain primary drive, with the belt primary drive held in readiness for comparison testing. The result was mounted in a mobile test rig for demonstration to Edward Turner outside the Meriden factory gates, with outriggers on either side to give the slave machine a rolling start. In this guise, with a chain primary, power improved quite dramatically, but with the primary transmission converted to belt drive, it was found the belt drive was using up as much as one-third of the engine's entire output!

The chain primary was then rein-



1957 TRIUMPH 200 TWIN PROTOTYPE

Engine: 200cc air-cooled 2-stroke parallel twin,
51mm x 49mm bore and stroke, 20hp @ 8,500rpm
Carburetion: Single 24mm Mikuni (Amal originally)
Transmission: 4-speed, chain final drive
Electrics: 12v, coil and breaker points ignition
Frame/wheelbase: Tubular steel single loop/51in
(1,295mm)
Suspension: 30mm telescopic fork front, dual shocks
rear
Brakes: 6in (152mm) SLS drum front, 7in (178mm)
SLS drum rear
Tires: 3.25 x 17in front and rear
Weight (dry): 210lb (95kg)



The headlight nacelle holds the ignition switch and speedometer (middle left). The carburetor is housed inside the rear cowling (below).

stalled, but by then Turner had apparently lost interest in the project, and a short while later he decreed that it be scrapped, with the engine and its vestigial frame being laid to rest out of his sight in the factory cellar. So Yamaha had another couple of years' grace to develop the YDS-1, its first 2-stroke twin-cylinder street bike, of which it would make several million such units in the coming decades.

Long forgotten

With the closure of the Meriden factory after the bankruptcy of the Triumph Workers Cooperative in August 1983, and

in preparation for its ensuing demolition by John Bloor to build a housing estate, the sale of all the assets, machinery, fixtures, etc., saw a selection of Triumph prototype engines exhumed from the cellar. Many of them were acquired by Derek Chapman and his son Michael, proprietors of Evesham Motorcycles not far away in Worcestershire. This included the 200cc 2-stroke twin engine and its Tiger Cub-derived chassis. In 1984, the Chapmans put their collection of fac-

tory memorabilia up for sale, and it was acquired by a Mr. F.M. Chivers for £85 (\$114) cash! He did nothing with it for the next decade, but in September 1994 Chivers offered it to Sammy Miller, who bought it from him for £350 (\$536) — nice work if you can get it!

"When I was working at Ariel in 1956, we were about to launch the Leader and Arrow as part of a complete switch to 2-strokes, in designing which we'd had Val Page do a really brilliant job on both





bikes,” Sammy recalls. “We heard that Triumph was working on something similar themselves, but then the word came back in 1957 just as our 2-strokes came out that they’d chunked it in the bin because the great Edward Turner didn’t like 2-strokes, and apparently didn’t think they suited Triumph’s masculine image! Of course, the Japanese then took the same identical format and went on to make millions of them, starting the following year. What a terrible missed opportunity that was for Triumph!”

Having obtained the prototype Triumph stroker, Sammy then used period Tiger Cub running gear to rebuild it as a complete bike together with Bob Stanley, the Miller Museum’s mechanical magician. The 200cc Triumph twin apparently needed very little work to make it a runner apart from sourcing Tiger Cub wheels, suspension and brakes to hang on the chassis to make it rideable. “The engine was like new inside,” Bob Stanley says, “so it had obviously spent very little time running on the dyno. The only thing we changed was to fit a Mikuni carb instead of the Amal it came with — Mikuni make such nice carbs for use on

2-strokes that it made everything much easier, and you can’t see it, anyway.” Presumably, the reason for such a long inlet tract is simply cosmetic, to be able to tuck the carb away behind the side panels introduced on the T20 Tiger Cub for 1958, but modified to suit the absence of any oil tank. The engine runs on a 4-percent petrol mix.

Although it’s unregistered — but like 90 percent of the contents of the Miller Museum it’s fully functional and rideable — the chance to ride the Triumph

2-stroke for myself came on the long private driveway leading to a magnificent country home near the Miller Museum, as well as along Sammy’s tighter test track weaving its way around the Museum grounds. This allowed me to simulate everyday use on the little bike, once I’d easily kickstarted it into life with my right foot, leaving it to purr away at a fairly fast idle through the twin exhausts.

The exhaust is conventional in design, as Walter Kaaden’s MZ secrets had not yet escaped to the West via the refugee Ernst Degner. But even so, Bob reckons the little engine produces around 20 horsepower at between 8,000 and 9,000rpm, and that sounds right judging by the distinctly spritely acceleration the little bike delivers once you notch bottom gear on the one-down, three-up, right-foot 4-speed transmission with its very light-action clutch. The small 80mph speedo nestling in the top of the headlamp nacelle indicated 70mph in top gear with more to come before I thought it best to slow down! That was a wise move, because the small 6-inch, single-leading-shoe drum front brake is distinctly on the feeble



The cover for the Lucas RM13 stator was made from a sauce pan by development fitter Dennis Austin.

side. With zero engine braking to help out, you must also stamp quite hard on its 7-inch rear brake to obtain decent deceleration.

The 51-inch (1,295mm) wheelbase of the prototype stroker's Tiger Cub frame does make the little Triumph seem pretty diminutive, but it would be quite comfortable for someone of my 5-foot-10-inch height to use for commuting or running errands. You do have to coax it into the powerband via the clutch lever when exiting slow corners, however. And while the reed-valve engine is quite torquey it's also just 200cc in capacity, so you need to make allowances. But there's absolutely no vibration from the parallel-twin engine, even when you rev it hard to keep it on the pipe when you hit a higher gear.

What a shame Edward Turner wasn't more patient, and didn't give his R&D team more time to develop this sweet little engine. And full marks to Sammy and Bob for their work in building the bike totally devoid of any reference material to achieve this. In doing so, they've demonstrated that Edward



The Sammy Miller Museum

The Sammy Miller Museum (sammymler.co.uk) in New Milton, Hampshire, U.K., is crammed full of interesting machines — including factory prototypes and numerous ingenious designs from all over the world. It also counts as one of the world's largest collections of exotic racing bikes, all of them in running order and including the legendary Moto Guzzi 500 V8, the supercharged AJS 500 V4 and post-war Porcupine, and innumerable famous bikes from Triumph, Norton, AJS, Velocette and many more. There are also offroad enduro, motocross and trials icons. The Museum is open to visitors daily from 10 a.m. year-round.

Turner really overlooked a golden opportunity to beat the Japanese to the punch. History records that instead, they duly delivered Triumph the knock-out blow exactly a decade later with the debut of the 4-cylinder Honda CB750.

Now under John Bloor's ownership, Triumph is once again looking at making

the small-capacity motorcycle in India that they nearly launched five years ago at their putative Indian factory that ended up never getting built (bike and factory, both), but this time in conjunction with local giant Bajaj Auto. I wonder if it'll be a 2-stroke twin, like this one from exactly 60 years ago? **MC**





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Barry Schanberger took home our Best Norton award for his beautifully restored first-year 1968 Norton Commando 750 Fastback.

BARBER 2017

Nortons rule at the 13th Annual Vintage Festival

It's pure conjecture, but we're fairly certain that had it not been for a certain Hurricane Nate, the 13th Annual Barber Vintage Festival, held Oct. 6-8, 2017, would have set yet another attendance record for what has become the single largest vintage motorcycle event in North America. The 2016 event witnessed a claimed 73,000-plus total attendance, and while Barber is not issuing attendance figures for 2017, a seat of the pants assessment says Friday's crowds were the biggest ever. Unfortunately, with Hurricane Nate knocking on the door and threatening to make landfall Saturday night, the Barber folks made the only decision they could: cancel Sunday entirely.

They made the right choice. Although Friday's weather was picture perfect, by Saturday morning the sky had taken on an ominous tone, and by mid-afternoon we were getting hit with sporadic light rain as we handed out awards for our annual Barber Vintage Bike Show. And as if on cue, at 7 p.m. Saturday, the skies let loose a pouring rain that didn't stop for the next 24 hours.

The cancellation was definitely a drag, but up until Saturday afternoon the festival was everything we've come to expect, with AHRMA racers working the park's 2.38-mile track in the National Historic Cup Roadrace and playing out in the woods in the vintage offroad series. Contributor John L. Stein was among those offroad riders, riding a Rickman 125 that he bought at the swap meet before burning the midnight oil to prep it for the Saturday

race (read his story on Page 66).

Friday night saw the return of the popular Motorcycles by Moonlight museum fundraising dinner, which took a hiatus during construction of the museum's new, and now complete, 86,000-square-foot addition. Two-time 1979 and 1980 AMA Superbike champion Wes Cooley was this year's special guest, interviewed during the dinner by 1977 Daytona Superbike race winner Cook Neilson. Neilson and Cooley raced against each other several times, and it was a treat to listen to the former competitors share their track stories from an era many look back upon as a true Golden Age in AMA racing.

Cooler yet, Cooley made time to come by the *Motorcycle Classics* tent to hand out awards for our bike show, sharing more stories with our assembled crowd. Cooley walked away from the racing scene following a devastating 1985 crash, and has only just recently come back into the fold. Clearly humbled by the attention enthusiasts pour over him all these years later, Cooley's presence at our tent was a high honor.

The Norton Commando was our featured bike, and 18 of the model filled the space around our tent, sharing the limelight with a bevy of fantastic vintage bikes. Special thanks to the folks at BikeMaster, Randakk's Cycle Shakk, Z1 Enterprises, Mikes XS, B'laster, S100, Spectro Oils, Pecard and Hagerty Motorcycle Insurance for making it happen. See you there next year. **MC**



Clockwise from left: Norton lineup; judges Brian Slark (left), Mark Mederski and Alan Cathcart; Russell Briney's original 1981 Yamaha 550 Seca; Wes Cooley at the *Motorcycle Classics* tent; more classics out in the yard.



COREY LEVENSON

Klaus Huenke took home our Editors' Choice award for his fantastic 1971 Munch TTS. Motus Motorcycles founders Lee Conn (left) and Brian Case (center) talk with museum founder George Barber after receiving the museum's James Dillard, Jr. Award.



THE LONGEST HOUR

Vintage dirt bike racing, with a twist

By John L. Stein
Photos by Jeff Inskeep and Larry Mayo

The challenge sounded easy enough: Find two race-eligible dirt bikes at the Barber swap meet, fix them, and go racing. What could go wrong?

Let me tell you about the Alabama woods. When you're riding through them at speed, they're a beautiful, moving kaleidoscope of shapes and colors. Tree limbs, leaves, vines, ivy and ground cover all appear and then whip past in a blur. The trail, cut deeper and wider by lap after lap of racing motorcycles,

emits a moist, fragrant smell of fertile earth. Streaks of sunlight and their alter ego, shadows, dance and flicker like an old silent movie: nature's own oscilloscope. And the still, humid Southern air creates a refreshing, cooling flow through your hot, sweat-soaked gear as you hit the powerband in first gear, shift



The "workshop" for the weekend was the Hagerty Insurance tent, set up in the swap meet at the Barber Vintage Festival.



Randy Pobst (left) and author John L. Stein with their fresh swap meet hauls. Now all they had to do was get them ready to race. How hard could it be?

to second, third and then tap it out in fourth on the straight-aways.

These are the sensations that 10-time pro car-racing champion Randy Pobst and I experienced at Barber Motorsports Park last October, during the American Historic Racing Motorcycle Association (AHRMA) vintage races. What brought us to the start line, and then shot us into the woods aboard our two race bikes, was pure serendipity. Two men. Two English 1974 Rickman dirt bikes, found in the event's swap meet. And one mission: Race, finish, and if possible, earn a podium.

Mission impassioned

Randy and I hit the Barber swap meet first thing Thursday. The area is simply huge, with rows of vendors, massive parts caches, and hundreds of bikes from ragtag to restored. What we needed for the AHRMA vintage motocross class was a pair of pre-1975 models, the latest allowable in the series. We didn't care what they were, but we did want to enter the same class, to line up at the gate together, to look each other in the eyes and growl, "Game on, brother."

Our first lap of the swap meet revealed numerous possibilities but no clear winners. Here was a first-year 1974 Kawasaki KX450 — a monster with a reputation for squirrely handling. Alas, it had no compression whatsoever. Two Honda CL175 scramblers were mighty appealing, but they'd be badly outgunned by real 250 MX weaponry. A pair of BSA and Triumph 250cc singles looked good, except for low compression on one and a seized fork on the other. With just 72 hours to convert them into racers, they both seemed like long shots. Honda Elsinores — both 125cc and 250cc — presented themselves, but poor overall condition, sloppy swingarm bushings and missing parts nixed them, too.

Most prevalent were early- to mid-1970s Japanese trail bikes like the Suzuki TS125 Duster, TS185 Sierra and TS250 Savage, 175cc Yamaha CT1, CT2 and CT3 models, and Kawasaki's 125cc F6, 175cc F7 and KE250. But finding a reasonably matched pair of the same displacement proved tough. As the afternoon wore on, things seemed bleak.

Two little unicorns

In a divine bit of inspiration, Randy suggested checking out the motocross pits. Although I argued there was little hope of finding anything but racers' own bikes here, Randy's instincts were better, and soon after arriving we found a neat little 125cc Rickman Six Day Enduro. With a handmade English mild-steel frame, fiberglass bodywork, a steel gas tank, and an air-cooled, radial-head Zündapp 125cc engine, it was a little jewel. It was nearly all there, and with a Mikuni carburetor conversion seemed like a possibility. It even ran, although the cracked tires, a leaking rear tube, little fork damping, and an inability to run without the carburetor enricher on were question marks. But so far it was the closest thing to right we had seen. Randy bought it for an even \$2,000. We had a bike.

The Rickman meant racing in AHRMA's Classic 125 Vintage Motocross class, and looking at the rule book revealed there were only two common bikes that shared the same class and which we were likely to find — a Yamaha AT1 Enduro and a Suzuki TS125 Duster. "Oh no," I thought, thinking of a rattly Duster we had seen earlier. After returning with Randy's Rickman, we began another lap around the swap meet, and I felt despondent that I'd end up with that rattle-can Suzuki.

Shuffling along the second-to-last row, dispirited in the heat and humidity, I looked up and could scarcely believe my eyes. To my right, just unloaded from a trailer, was a red 125cc Rickman Zündapp Motocross. Incredulous, I blinked, blinked again, and then floated toward it as if lassoed by some strange gravitational force. A cardboard sign indicated it was for sale, along with a spare bike, for \$2,300. I found the seller, Scott Lochbihler, and asked him about it. "It used to run — three years ago," Scott said.

Randy hustled to the Hagerty Motorcycle Insurance tent (Hagerty generously hosted our adventure) and returned with some premix, which we dribbled into the carburetor as if feeding a baby bird. One kick. Two kicks. A cough. Six kicks. Finally, the long-asleep Zündapp engine started, its staccato exhaust barking crisply out the pipe. "Yes!" I thought. But then another thought intruded — the red Rickman was attracting a crowd, and fast. I

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Miracle of miracles, they had exactly the right size Dunlop Geomax knobbies and Regina chains pre-delivered to the event.

had to act quickly. Reflexively, with the swap-meet wolves circling, I ducked under Scott's E-Z UP, turned his lawn chair away from the crowd, invited him to sit, and engaged him with a string of questions like, "So what's the history of this bike?" Happily, the wolves never intruded, and I was able to strike a bargain of \$1,900 for the Rickman and parts bike.

The big thrash

As soon as we'd propped the Rickmans on their work stands in the Hagerty tent, reality set in: 1) Both needed significant attention, including new tires and tubes, new chains, oil changes, fuel-system servicing, brake adjustments, safety checks and plenty more; and 2) Rumors swirling around Barber were that the entire Sunday program — including our motocross races — would be cancelled due to the arrival of Hurricane Nate, which was tracking straight toward Birmingham. So, instead of three days to get the bikes race-ready, we'd have only two. We dug in.

Early Friday morning we tore the front wheels off, cleaned the brakes and levered off the hardened old tires, replacing them with new 80/100-21 front 100/100-18 rear Dunlop Geomax MX3S knobbies we'd shipped ahead of time. If finding two nearly identical Rickmans was a miracle, correctly guessing the exact tires we'd need ahead of time was another. We were scoring with Lady Luck. Another windfall was that Regina Chain had sent 428-series Professional Cross Supermoto chains and a chain breaker, and after we cut about four links off they fit perfectly. Progress!

As afternoon faded into night, pin-striper Chastin Brand hand-lettered a cool "Hagerty Special" retro logo and script onto each tank — in gold for Randy's enduro and sky blue for my motocrosser. They looked

awesome. Behind our work area, a poor guy in his pup tent had enough of us by 10:33 p.m., so we shut down our loaner generator and lights, stumbled to the truck, and hit our motel for a quick six hours of sleep.

Ready, set, race!

Race day. Saturday dawned gray and ominous, as the hurricane began spiraling into Birmingham. It was now official: Saturday's programs would run, but the Barber Motorsports Park would



John (left) and Randy work into the night, here prepping Randy's Enduro.



John's Rickman Zündapp Motocross the night before the race (left). Chastin Brand hand lettering Randy's Rickman tank.

close down afterwards. With Sunday's sprint MX races out, we were committed to Saturday's hour-long cross-country instead. The course was deep in the woods, and no one seemed to know where it went, exactly. Talk about flying blind — despite over 500 car races, including two GT class wins in the Daytona 24 Hours, Randy had never raced a bike. And I had never raced in the woods.

Arriving at the track at 7:15 a.m., we set to work prepping the bikes: a thorough nut-and-bolt check, adjusting and lubing the cables, and trying to hydrate in the warm and humid conditions. With temps in the high 80s with humidity to match, it was fixing to be a tough day down in Alabama.

Preparations came down to the wire, and Randy and I made the riders' meeting just after race director David Lamberth started speaking. Each lap was 3 miles, give or take a bit, he said. From the starting area, a landing in a clearing of trees, the course dropped suddenly downhill to the right and then picked up a winding trail. So thick were the woods here that it was quite impossible to ride straight. Add in the insufferable weather, and Randy and I both finished the sighting lap with the same thought: How are we going to race this course for an hour? Half the riders wore CamelBaks, and while we had hydrated as much as possible, neither of us had one. We had come to Alabama for a pair of five-lap motos, after all. Further, we had no idea how far the Rickmans would run on a tankful of gas. I was cautiously optimistic they'd go the distance, although in matters of ignition, spark plugs and mechanicals, I couldn't guess. We were about to find out.

Into the deep

The event used a dead-engine start with a half-dozen riders per row, beginning with Experts and extending back to Novices. Rows were flagged off 30 seconds apart to keep the 100 or so riders from bunching up too much in the narrow woods. Beside me, Randy's mind was whirling. "While I've raced cars for 30 years, this was my first motorcycle race," he said later. "I felt an intoxicating cocktail of fear and excitement lining up with guys who have done it many times before. It felt like diving into dark

water, not knowing how deep or how cold it might be."

Happily, Randy's Mikuni-equipped Zündapp started first kick, but my bike, possibly owing to its older Bing carburetor, required at least four stabs, and I was nearly the last from our row into the woods. I could see Randy getting away and didn't think I could keep up, but one at a time riders made errors, and I caught Randy on a rare uphill that was wide enough for two bikes. Luckily, I was able to zap by, then put my head down and fly.

The course was relentless, most of it narrow single-track. The woods were so thick we couldn't sight too far ahead, and it was easy to miss a turn, clip a tree, or stall on a root or rock while scrambling uphill. I overshot several turns, even stalling the bike once afterwards, but the few positions that cost I eventually made back.

After the flurry of the initial lap, my Rickman settled into third position and Randy's settled into a steady fifth. The laps unwound, and we were beginning to memorize the course, to learn our bikes, and to manage our physical condition. There



Randy tears away from the start line, thanks to the bike starting on the first kick.



John in the woods aboard his Rickman. He was running in third place before the dino juice ran out.

were a few problems, though — neither bike was jetted well; mine stumbling rich on the bottom end, and Randy's had virtually no power anywhere except shrieking on full throttle. Plus, his fork started to seize almost immediately, and by race's end travel had been reduced to just an inch or two. He was getting beat up.

Stuck, and stuck good

Two-thirds of the way around the course, and 3-1/2 laps into the five-lap race, in an uphill woods section, my engine temporarily starved and I knew it was running out of gas. I initially hoped it was just a plug fouling, but it soon happened again on a dusty straightaway, and this time the engine stopped for good. The Rickman's motocross tank was just too small. Too bad — we had been on track for a podium.

As soon as the bike stopped, I felt in trouble physically without the cooling airflow. Clearly dehydrated, my heart rate and temperature climbed, I felt dizzy and my cognitive function began to erode. I tried to flag down 2-stroke riders. One stopped, however, he said he didn't have enough fuel and sped off. Then I got the idea that gas from the right side of the tank could be sloshed over to the left side, where the petcock lived. The engine started.

Relieved, I slowly continued on, but in 1/4 mile the engine stopped again — this time down in a deep glen — and would not restart. I leaned the Rickman against a tree and, after waiting over an hour for the promised sweep vehicle to come, began hiking out. Doing so, I noticed plenty more things in the woods. The rich duff, spider webs, tangled roots, rotting logs, broad white mushroom crowns, and ants and beetles. It really was the deep woods, and I had only the vaguest idea where I was. Every hill was an effort; I was hot and thirsty and my boots felt like lead weights. After reaching a clearing, I stared at the dirt and saw in script the name "Stein." I looked again, and again, and it was clearly there. So weird — I was hallucinating.

To cool down I removed my top clothes and body armor, all but my undershirt. A few storm sprinkles arrived, and that helped. I was a long way from the finish, but knew I had to keep going, up and down

hill, twisting and ducking under branches and scrambling off course when bikes approached after the Post Vintage race — the last event of the day — started. Finally, I encountered race director Lamberth on his ATV, riding the course backwards in search of missing riders. He took me to the motocross pits, where Randy and his friend, Deborah, who had been frantically searching for their lost companion, were waiting. Randy, who had heroically finished — his own bike's larger enduro tank virtually empty — begged some water from campers and we sucked it down eagerly.

Back at the Hagerty tent, I mixed up more premix and headed back to find Lamberth, who had promised to take me to the bike. It was not easy to find, but my description of course landmarks, together with David's intimate knowledge of the woods, ultimately brought success. His Honda Recon's headlight peered through the gathering dusk as I filled the Rickman's tank, and amazingly, it started first kick. Thanks to David's rescue I quickly returned to the tent area and helped pack up, then joined Randy in delivering the bikes to a transporter waiting to take them to Hagerty's Traverse City, Michigan, headquarters.

Like ending a "difficult" date, after handing my bike to the truck driver I quickly spun 180 degrees, started walking, and didn't look back. Sweaty, dirty, sore, tired, hungry and still thirsty, I needed more water, dry clothes, fish tacos and a cold *cerveza* way more than I needed to say goodbye to that lovely little Rickman. But we will meet again soon, hopefully in a nice, short motocross race. Only this time, it will be on our terms. And not on those of some storm's named Nate.

In the meantime, this is Hurricane Rickman, out. **MC**

Originally published at Hagerty.com



John and Randy after the race and John's long trip back from the woods.

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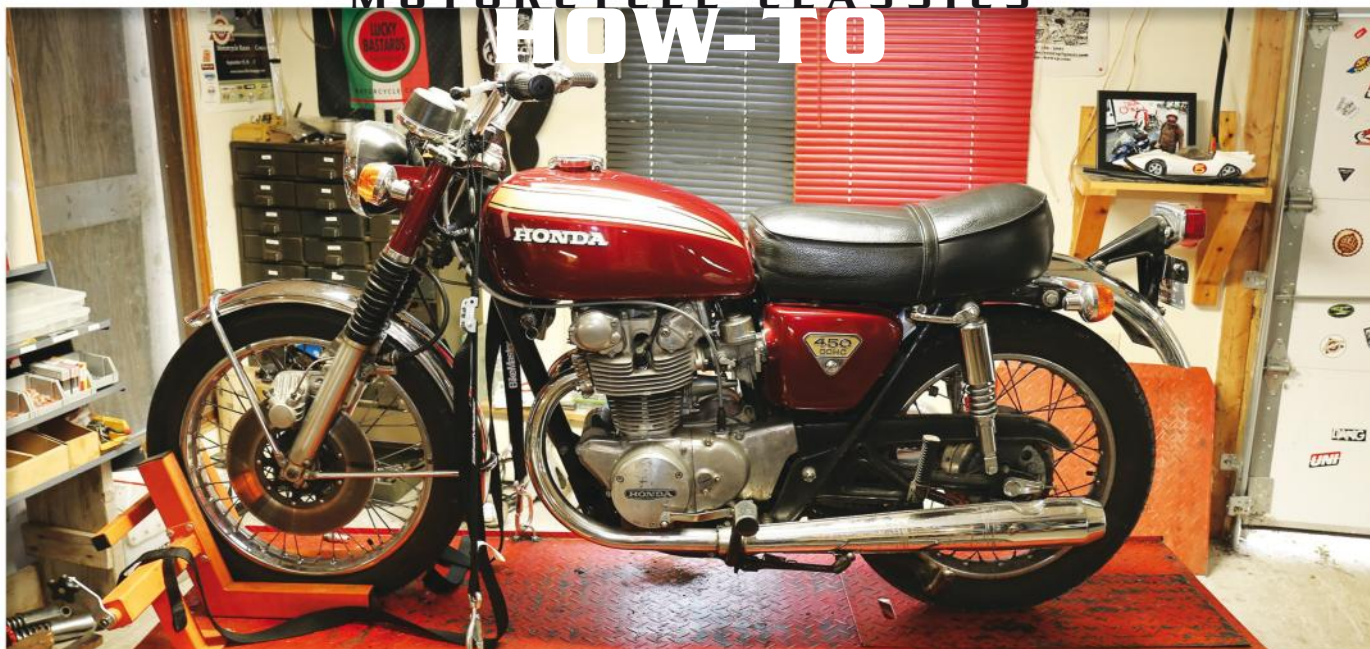
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Honda CB450 starter overhaul

As reliable as vintage Japanese electrical hardware may be, everything has a service life, and that includes the starter motor on our subject 1970 Honda CB450K4, which had been displaying a tendency to drag and otherwise turn slowly, making the CB450 somewhat hard to start.

New starters for the CB450 haven't been available for some time, and while used starters are — typically for around \$50-\$90 — it's possible you'll end up buying the same problems you already own. That makes rebuilding your starter a good option, and fortunately, kits like the one we got from Honda specialists Common Motor Collective (common-motor.com) are readily available. The \$65 kit we purchased is very comprehensive, with all new wear and service parts including a new drive-end bearing and seal, a new brush plate assembly with brushes, starter housing O-rings and gaskets, planetary gear bushings, the armature support plate bushing, the rear cover bushing, and new fiber gaskets and replacement nuts for the starter battery cable post.

Save for the hassle of having to remove the left side cover, which also houses the alternator, removing the starter on the CB450 is relatively easy. The side cover must be removed, as it's otherwise not possible to re-engage the starter drive chain once the starter has been removed, as the photos will make clear. First, however, you have to remove the shift lever, followed by the drive chain sprocket cover. Make sure to have a new side cover gasket on hand, typically around \$12-\$15. Once the starter has been removed, make sure the armature and field coils are good before going any further. You can research how to

confirm all of this for yourself using a simple multimeter, but we took both pieces to our local automotive electrical shop, where a quick test confirmed that 1) the armature was running true and the windings weren't broken or damaged; 2) the commutator end was in good condition with even resistance, needing only a light sanding to clean up the contact face; and 3) the starter field coils were good. If it hadn't passed these tests, we would have had to look for a used starter and start over.

Getting all parts clean before reassembly is paramount. Brake and electric parts cleaner works best here; just remember it's nasty stuff, so wear gloves and work in a well-ventilated area. Although not technically complicated, this can be a challenging project as it involves a fair amount of detail. Although the photos don't show it very well, note that the brush plate keys to the starter body for proper alignment.

We suggest giving yourself a full morning or afternoon so you don't rush the job; give yourself time to work slowly and carefully. If you can do that, you shouldn't have any problems, and you might even find it a fun challenge. This project doesn't require any special tools, although we strongly suggest having the proper JIS "Phillips" drivers and an impact driver for removing the necessary fasteners, especially the neutral switch, which also secures the alternator wiring. A small bench-top tool press comes in very handy, but you can get away without it; you just won't have as much control when it comes time to press in new bushings and such.

As ever, we recommend having a good shop manual on hand for parts identification and proper torque specs.



The CB450 starter overhaul kit from Common Motor Collective is very comprehensive.

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1 Disconnect the negative lead to the battery. Disconnect the positive battery lead at the starter (the post is just visible on the end of the starter, under the left exhaust header). Remove the two bolts securing the starter. Remove the starter.



2 Remove the gear shift lever, then the final drive cover. Remove the two screws securing the neutral switch above the sprocket, which secures the alternator wiring. An impact-type driver is recommended as the JIS "Phillips" screws can be tight. The neutral switch is keyed. Note its orientation for reinstallation.



3 Place a pan under the engine. Remove the bolts securing the left side cover and alternator. Our side cover was stuck fast to the dowel at upper left. We inserted a wooden dowel through the starter opening and gently rapped the inside of the cover until it pushed free.



4 With the starter on the workbench, remove the two long bolts holding it together. If the bolts are tight, use penetrant and an impact driver. Remove the bolts, then the rear cover.



5 Place the starter upright on the drive end. Remove the screw securing the lead from the starter motor field coils to the brush assembly.



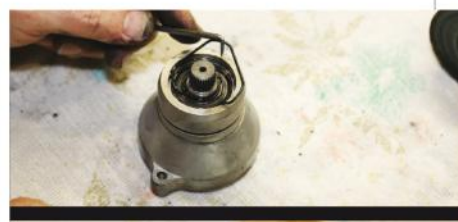
6 With the brushes still in place, lift the brush assembly and plate straight up and remove it from the starter. Remove the thrust washers from the end of the commutator. Clean and set them aside for reassembly.



7 Remove the drive end of the starter. The drive end is a planetary gear set for starter drive reduction. The starter motor spins the two smaller gears, which spin the starter output shaft. Remove the two small gears and set aside.



8 Remove the armature support plate and any thrust washers under it. Remove the armature and clean it using electric parts cleaner.



9 Flip the drive end over. Remove the keeper ring for the end bearing, then the snap ring on the output shaft. Push the output shaft free of the drive end housing. Remove the thrust washer from the shaft. Clean it and the shaft and set aside for later reassembly.

HOW-TO



10 Place the housing on wooden blocks or a vise (as shown) and drive out the end bearing using a flat punch. It should come out fairly easily.



11 With the bearing removed, use a seal extractor or suitable tool to remove the drive housing seal. Thoroughly clean the housing.



12 The original bearing features a metal shield on the engine side, while the replacement bearing has rubber shields on both sides. It could be argued that change makes the starter seal unnecessary. Regardless, we did install the new seal, which should be pushed into place with the open side up.



13 With the seal seated in the housing, install the bearing using a bearing driver, making sure it's inserted deep enough for the securing clip to be installed. Install the clip. Push the output shaft with thrust washer installed back into place and reinstall the snap ring.



14 To remove the bushings in the planetary gears, we supported the gears on a suitably sized socket (open end up), then used a small press and a 1/4-inch drive, 5/16-inch deep-well socket to push the old bushings out.



15 The new bushings are chamfered at one end to ease installation. Start the bushing by hand making sure that it's square with the gear, then press it fully home using the press.



16 Install the rebushed gears onto the output shaft, making sure they turn freely on their posts and that the entire gear assembly turns freely. Lubricate the gear teeth with grease.



17 Clean the armature support plate, removing any old gasket material. Press out the shouldered bushing in the plate, then press the new bushing in with the shoulder in the same orientation. Install the new support plate gaskets with the narrow gasket facing out and the wide gasket to the inside of the starter.



18 Slip the cleaned armature back into the starter body. Install any thrust washers removed earlier, followed by the armature support plate. Loosely install the drive end housing.

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HOW-TO



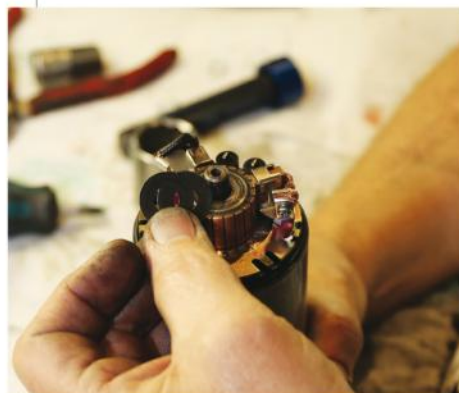
19 To remove the rear bushing, we first tapped 8mm threads into the bushing. We then threaded a bolt into the bushing, through a flat plate placed over the cover opening. Tightening the bolt pulled the bushing out easily.



20 With the bushing out, remove and save the felt oil wick as the kit does not include one. Clean the cover. Reinstall the wick and press the new bushing in flush. Oil the bushing.



21 Stand the starter on the drive end. Install the new O-ring seal on the starter body. Pull the brush springs back and slip the brush plate over the commutator. Ensure the coil wire aligns with the insulated brush set and the tang in the plate aligns with the notch in the starter body. Attach the field coil wire.



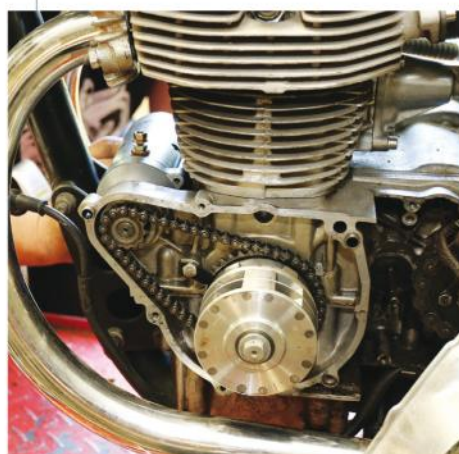
22 Replace the thrust washers removed earlier. Smear a thin film of oil on the end of the armature shaft. Install the rear cover, making sure the brush plate is properly aligned.



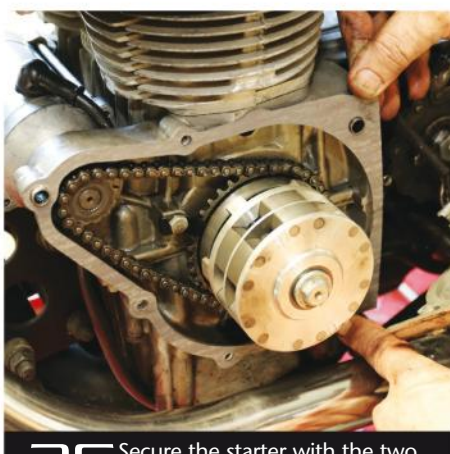
23 With the rear cover in place, install the two long Phillips bolts through to the front housing and screw them home tight. Turn the starter by hand to ensure it does not bind.



24 Install the new O-ring on the drive end housing and grease lightly. Remove the old starter cable nuts and insulators and replace them with the new ones in the overhaul kit.



25 Hold the starter drive chain and sprocket in position and install the starter, making sure the sprocket and starter drive ends spline together.



26 Secure the starter with the two bolts. Ensure the sealing surfaces for the engine and side cover are clean. Install a new gasket. The dowels will hold it in place. We did not use any sealant.



27 Finally, reinstall the side cover with the alternator, the alternator wiring securing plate, the final drive cover and the shift lever. Secure the positive battery lead to the starter. Connect the negative lead to the battery. If everything went right, your starter should spin right over.

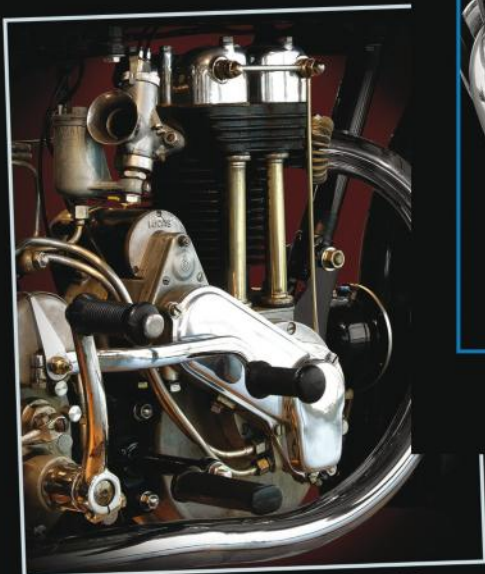
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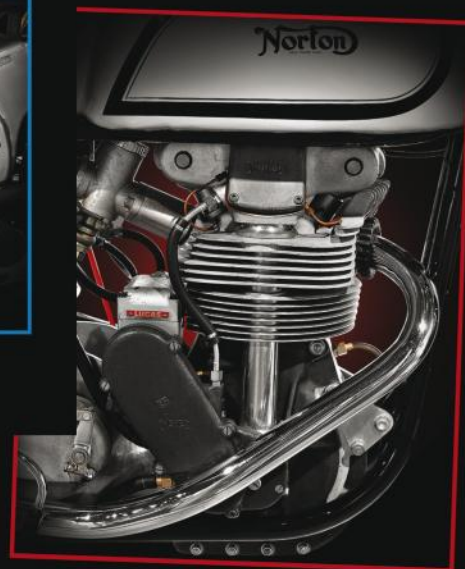
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<u>DISPLAY</u>	<u>PAGE</u>
1. Baxter Cycle	89
2. Donelson	90
3. Jerry Greer's Engineering	85
4. Legedary	89
5. Marbles Motors	85
6. National Motorcycle Museum	87
7. Pecard Leather Care Co.	87
8. Precision Motorcycle Painting	89
9. Race Tech	87
10. Rick's Motorsport	89

IFC = Inside Front Cover
OBC = Outside Back Cover

IBC = Inside Back Cover
Expires February 28, 2020

“The latter is more expensive, but you know you’ll get a good unit.”

Intermittent charging

Q: I have had an intermittent charging problem with my 1978 Yamaha XS750 Triple since the day I bought it. I bought it two years ago with 18,000 miles on it, and now it has 20,000. The previous owner installed a new regulator, so the first thing I did was install a new battery and repair the wire connections at the stator (it had been dropped and it pinched one of the wires).

I use an amp meter on the battery side. When charging, it shows 5 amps at 2,000rpm with the lights on, which I think is a bit low, but according to the Yamaha manual I have is what it should be. But I find when I ride it the charging becomes intermittent and eventually drains the battery. As an experiment, I took it on a 75-mile round trip, with a friend in front of me, for safety reasons, and one following. It may be coincidental, but it seemed when I would hit a bump in the road it would sometimes alter the charging state. I have checked and rechecked all the connections and repaired a few of them to no avail. Would the headlight perhaps cause this, or do you have any suggestions?

Dennis/via email

A: I think you found the obvious fault in the pinched wire, but perhaps there is some hidden damage in the stator windings that shorts out when jarred. You could try a used alternator from eBay, or go whole hog and get a rebuilt one from Rick's Motorsport Electrics (ricksmotorsportelectrics.com). The latter is more expensive, but you know you'll get a good unit. If you've checked all the visible connections, that leaves the ones you can't see on the inside of the case.

Tiger troubles

Q: I have restored my 1971 Triumph TR6R T120 Tiger from top to bottom. The engine and electrics were professionally done, while I stuck to the other things. I've had the bike out half a dozen times and all seemed fine. Recently, while riding my Tiger, which now has 168 miles on it after the rebuild, my engine decided to run on one cylinder. I limped home.

The coils are original Lucas 17M12. I



Ready to take your classic queries: Old-bike mechanic Keith Fellenstein.

checked for spark at the plugs first, the wires secondly, and got spark on the left side (as I sit on the bike) but not the right side. The bike has a new Pazon ignition in it. I then switched the wires to the opposite, and also did the same with the plugs and the coils. I got the same results on the right side — no spark. I took an ohm reading on both of the coils and got 4.7 on the primary side, and 5.36 and 5.3 on the secondary sides. I also changed gas.

Upon start-up after all of this, the bike ran fine for about 30 seconds and then the right cylinder stopped running again. Am I on the right track to assume that I need to replace the coils? Both sparks are orange/light yellow when they fire. Are the coil ohm readings correct/within specifications, or does it indicate that they need to be replaced? The book says 3 ohms minimum and 3-4 ohms maximum for primary resistance, but nothing about the secondary resistance. Maybe I've answered my own question, but I'd like to hear from an expert if I am on the right track.

Burt Horner/via email

A: The biggest problem I can see is you are running two 12-volt coils in series in a wasted spark ignition system that calls for two 6-volt coils in series. Since the Pazon charges and fires both coils every time, you are giving it too much of a load to deal with. Switch to two 6-volt coils in series or get one dual output coil of 3 ohm primary resistance and I think your problems will disappear.

Update: I got an email back from Burt, and after changing to 6-volt coils and chasing down a grounding problem, he's on the road again.

Gauge vibration

Q: I have a 1977 Triumph Tiger. I have a recurring problem with both the tachometer and speedometer. At higher speeds (50mph-plus) that generate greater vibration, the entire gauge begins to rotate within the black rubber housing that holds the gauge. As it rotates, the lighting fixture/bulb comes loose and then falls out of the gauge. I then have to remove the gauge and rubber housing from the chrome bracket that holds them, remove the gauge from the rubber housing and then re-seat the gauge so that the opening for the bulb lines up with its matched opening on the rubber housing. You may very well have heard of this before.

Any ideas how I can prevent this from happening (besides keeping my speeds under 50mph)? Thanks for your help and for your terrific columns in Motorcycle Classics.

Ron/via email

A: In addition to the vibration, you have the torque reaction of the instrument against the rotation of the cable, too. A number of fixes come to mind, but probably the easiest one would be some double-sided tape or foam installed between each of the instruments and the cup. It wouldn't require much to hold it still against the vibration.

Email questions to keithsgarage@motorcycleclassics.com or write:

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The Aerostich Cousin Jeremy jacket and Tirox's 360° Chain Brush

Aerostich Cousin Jeremy

Truth be told, two motorcycle jackets are all I need: One for hot summer days and one for the rest of the year. We get the chance to try out new gear pretty regularly around here, but when it comes right down to it, I've got two jackets I like. For 11 years, my summer jacket has been a Joe Rocket Sonic 2.0 ventilated leather jacket. The rest of the year I wear a Tour Master Transition I've also had for 11 years, and I never really wanted to replace it, until a new Aerostich Cousin Jeremy jacket showed up at our door.

I've had the chance to try out a couple of Aerostich Darien jackets, but the tough Cordura they're built from never made me want to invest the wear-time it takes to break one in. The Jeremy is different: It felt broken-in from the first day on the bike. The outer layer is made of 10-ounce waxed cotton, which is doubled up at the elbows and shoulders for protection, along with T3 armor inside. It is lined with a comfy suprenyl lining. The waxed cotton has softened with 12 months and a few thousand miles of use, and it's even more comfortable than it was the day it arrived. This is an Aerostich that doesn't feel like an Aerostich, and I mean that as a compliment. It's ready for your next road trip right out of the box, without the worry that you'll wish you'd worn your broken-in old favorite instead.

The collar is lined with a soft ultrasuede material, and it's a dual height collar, which can be unsnapped and flipped up when it's cold outside. The Velcro adjusters at the cuffs offer a precise fit, and the zippers allow you to leave the cuffs set where you want them, using the zippers to open the cuffs when you take the jacket on and off. Each of two large front bottom pockets



are big enough for a big socket wrench, a spark plug socket and some spare spark plugs, perfect, I discovered, for doing plug chops on my new (and lean-running) Norton. There's a pass-through on the left chest for stuffing your gloves in when you're gassing up, and another large pocket on the right of the chest is big enough for a spare pair of gloves or a ball cap. If you don't need a map, this jacket has enough pockets to almost eliminate the need for a tank bag.

Ordered to fit correctly, it's just big enough for layering underneath (base layer, sweater and a fleece underneath for temps below 40 F). When the temps are warmer, that little bit of room allows some airflow through the zippered under-arm vents and the two-way zippered back vent, if you choose to open them. There are Velcro adjustments at the waist that you can tighten to keep the wind from making the jacket billow at the sides. It's available as shown (brown with black shoulders), and is also available in all brown, all black, or black with brown shoulders. The black and brown color I chose hides oil stains well (see mention of Norton, above).

Suprisingly to me, the guy who's too lazy to break in new gear, I haven't worn my favorite Tour Master Transition in the year since I got the Jeremy. Though the Tour Master still fits and wears nicely, the Velcro at the cuffs has finally worn out. Maybe it's time to get some new Velcro put on that jacket and pass it along to another rider, because I don't think I'll be needing it now that I have a new three-season coat. Price: starting at \$667. More info: aerostich.com — Landon Hall

Tirox 360° Chain Brush

We all know we should clean our bike drive chains and sprockets regularly, but I'll bet most of us don't, owing to the simple fact that it's a dirty job that's surprisingly hard to do really well on the bike. A simple brush works OK, but really only to clean the side plates. And while there are chain-cleaning tools out there, few work as advertised.

Enter the 360° Chain Brush from Tirox. Incredibly simple, the Chain Brush is a spiral-shaped brush with a flexible, high-strength aluminum spine gripping very stiff nylon brushes. Using it is a snap. First, coat the chain with a suitable cleaning agent (most chain manufacturers suggest kerosene), then expand the Chain Brush a bit before rolling it onto the chain. It takes a little effort, as it is a tight fit. Next, expand the brush even farther to tighten its contact to the chain. Holding the brush, spin the wheel to pull the chain through the brush making at least three passes, then reverse direction and spin again. Pull the Chain Brush off, rinse and dry the chain, lube it, and that's it. It's still a dirty job, but this tool really works. Price: \$12.95. More info: tiroxproducts.com — Richard Backus



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RIDES AND DESTINATIONS



THE OWEN COLLECTION

The Owen Collection is a private museum tucked away in Walnut, a small community in southern California. Kelly Owen was a motocross racer who started racing on a 100cc Penton Berkshire in 1970, when he was just 13 years old. Owen raced professionally, including the 1974 and 1975 Los Angeles Coliseum Superbowl of Motocross. He knew he was good, but he also realized he couldn't make a living racing motorcycles. Owen retired from racing in 1976 and apprenticed in his father's construction business. After learning the trade he launched Clarion Construction in the 1980s. Clarion became very successful; its focus is on large-scale cold storage facilities in the food and related industries.

Motocross racing and motocross motorcycles were still in Owen's blood, and even though Clarion Construction was thriving, he couldn't stay away from motocross. Owen returned as a vintage motocross racer in 1988 on CZ and Honda Elsinore motorcycles. He started collecting vintage motocross bikes that same year. Owen's first restoration project was his 1973 Penton, a motorcycle he retired in 1974 and then restored in 1988.

The 1973 Penton became the seed that started the Owen Collection. Two or three restoration projects followed each year. The collection is focused on

motocross motorcycles from the 1950s, 1960s and 1970s. Owen was a consummate craftsman who performed much of the restoration work himself. Other motorcycles were purchased as new-old-stock machines still in their crates, and still others were returned to pristine condition by professional restoration experts. The emphasis was to not over-restore the bikes, although in some cases the original paint and metal work's lower quality was exceeded in the restoration process.

The Owen Collection emphasizes first year of production samples of the approximately 75 bikes on display. The collection

is immaculate and impressive. Montessa, OSSA, Bultaco, Honda, Penton, Yamaha, Suzuki, Kawasaki, Triumph, BSA, AJS and other vintage motocross motorcycles are supported by OC Powerstands, a motorcycle stand invented by Owen. 1965 and 1966 Triumph TT Specials are part of the collection (these were 650cc racers I lusted after in my youth; I could have spent the day looking at just those two). All of the bikes run and are in perfect condition. It's a stunning collection, easily among the best I have ever seen.

David Fair (a Clarion Construction employee and the Owen Collection cura-

tor) explained that Owen made a special effort to ensure all of the bikes had original equipment tires. Doing so was one of the most challenging aspects of each restoration. Fair is the man to call to schedule a visit (his card reads "Curator/Chief Tire Inflator").

Every *Destinations* article includes a "best kept secret"; in this case, the best-kept secret is the Owen Collection itself. It's not advertised and I only discovered it after an internet search for motorcycle museums. The Owen Collection can be viewed by appointment only.

Sadly, Kelly Owen passed away unexpectedly in 2016 at the very young age of 58, from a stroke. He was active right up until the end. Clarion Construction and the Owen Collection live on.

— Joe Berk

THE SKINNY

What: The Owen Vintage Motorcycle Collection, Walnut, California.

How to Get There: Call first to arrange a visit (the museum will provide directions).

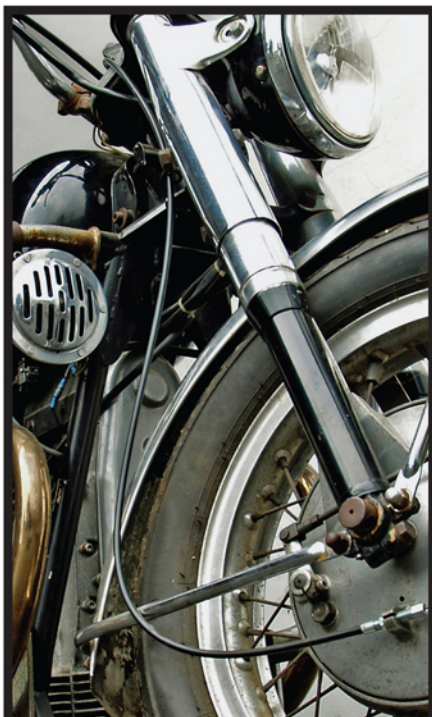
Best Kept Secret: The collection itself.

Avoid: Showing up without an appointment (you won't get in). Call (909) 594-9209 well in advance to arrange a visit.

More Info: owencollection.com

More Photos: californiascooterco.com/blog/?p=27405





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New Stuff for Old Bikes

From Kawasaki H2 exhaust systems to carburetor float pin tools, here are six cool products every classic bike fan should know about.



Self-balancing inner tubes

Tire balancing beads have been around for a while, but a new twist comes from Counteract with its new line of Ready-Balance Tubes. Counteract calls the tubes the first all-in-one tire and complete wheel assembly-balancing inner tubes for motorcycles. The Ready-Balance tubes come pre-loaded with Counteract Balancing Beads, which Counteract says dispense with the need for wheel weights. \$25-\$35 depending on size. More info: counteractbalancing.com



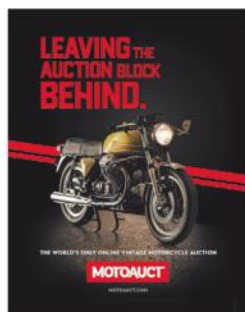
Kawasaki H2 exhaust

Owners of Kawasaki's legendary 750cc 2-stroke triple, the H2, should check out Z1 Parts Inc.'s latest offering, a complete chamber exhaust system designed to fit 1972-1975 H2s. Developed working alongside legendary Kawasaki triples drag racer Tony Nicosia, the system comes complete with mounting collars, tension springs, exhaust gaskets, and left, right and center mufflers and pipes. Available in chrome (\$1,299) or black (\$1,050). Repro exhaust kits also available. More info: z1parts.net



A better gasket scraper

This brass-bladed gasket scraper from the motorcycle tool pros at Motion Pro is ideal for scraping gaskets off aluminum faces, which can be easily damaged with steel scrapers or razor blades. The ergonomic handle is machined from 6061 billet aluminum and also doubles as storage for an extra blade. The scraper's narrow, slant-cut blade is designed specifically for thin engine cases. Replacement blades, including brass and steel, are available. \$24.99. More info: motionpro.com



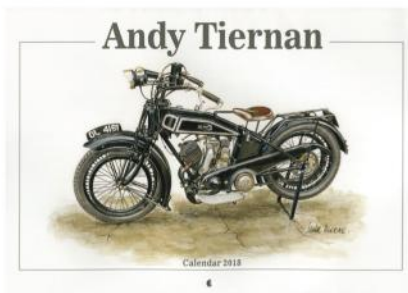
Sell your bike

Looking for an alternative to traditional auctions, eBay or Craigslist for buying and selling vintage bikes? Created by vintage bike enthusiasts Jason Delacroix and Jason Williams, MOTOAUCT is a new online vintage motorcycle auction site offering buyers and sellers an easier way to find and sell. Sellers and buyers are vetted, and the online format means sellers don't have to hassle with shipping bikes to auction and buyers don't have to hassle with immediate, on-site shipping. More info: motoauct.com



Float pin tool

Honda specialists Randakk's Cycle Shakk have available a neat little tool to help remove stubborn float pins with less risk of breaking the float pin posts, a familiar issue for owners of older Japanese motorcycles with float pins that have seized over time. Sized specifically to work with carburetors supplied on Honda GL1000 through GL1500 and Honda CBX, CX500 and DOHC Honda fours, it will work on any carburetor with 24mm- to 26.75mm-long float pins. Comes with full directions for use. \$29.99. More info: randakks.com



The non-profit calendar

The 2018 Andy Tiernan Classics calendar showcases great 2-stroke motorcycles from England. With lead pencil and watercolor artwork by Mike Harbar, featured bikes include the 1924 Dunelt Model C, the 1929 Scott Squirrel, the 1940 S.O.S. Magnetic and more. Important dates in the U.K. classic bike scene are noted, and all proceeds from the calendar sales go to the East Anglian Air Ambulance, a non-profit ambulance service that has saved the lives of many motorcyclists. \$13.20 (at press time). More info: andybuysbikes.com

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7	8 <small>New Year's Day</small>	9	10	11	12	13
14	15	16	17	18	19	20
21	22 <small>Martin Luther King Jr. Day</small>	23	24	25	26	27
28	29	30	31	<small>The Norton 850 Commando Mark II appeared in March 1975 with disc brakes, left-side shifting and an electric starter. More than 40 years later, a good Commando can still keep up with much newer machines on busy roads. To find more, visit MotorcycleClassics.com/Commando</small>		

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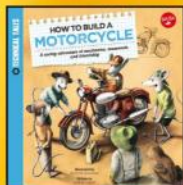
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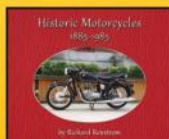
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How to Build a Motorcycle

How to Build a Motorcycle tells the story of how a group of three unlikely friends – a rat, a sparrow, and a frog – come together to build a motorcycle! Detailed illustrations explain the overall functions of the engine, clutch, brakes, and distributors, as well as many other parts of the motorcycle. Through hard work and perseverance, the three friends learn about mechanics and teamwork as they work together to build a miniature motorcycle. A great book to read with your young bike enthusiasts!

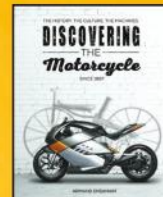
#8057 \$14.95



Historic Motorcycles 1885-1985

Historic Motorcycles 1885-1985 provides the reader with stunning full-color photographs of more than 100 of the world's most beautiful and rare motorcycles. Richard Renstrom, an author of five books and an accomplished photographer, spent more than 50 years accumulating this library of photos of vintage motorcycles from 12 countries (including the United States, England, France, Germany, and Japan). Each photograph is accompanied by a detailed historical essay documenting the origin of each motorcycle as well as the technical specifications that make each machine a true original.

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Discovering the Motorcycle

Discovering the Motorcycle is a full-throttle, never-before completed history and cultural evaluation of motorcycling from 1867 to the present. This book introduces readers to the vast world of motorcycling, its history, social impact, and how these machines are built and function. Chapters cover the history of motorcycle racing, bike events, museums, and clubs.

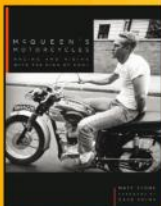
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Motorcycle Classics has put together a 100-page special edition featuring articles that explore the decade and what it brought to the motorcycle world. The Honda GL1000 Gold Wing, Triumph X75 Hurricane, BMW R90s, Suzuki GS1000, along with many others are all covered in this glossy-page, full-color guide.

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McQueen's Motorcycles

Even 30 years after his death, Steve McQueen remains a cultural icon. This book focuses on the bikes that the King of Cool raced and collected. From the first Harley McQueen bought when he was an acting student in New York to the Triumph "desert sleds" and Huskys he desert raced all over California, Mexico, and Nevada. *McQueen's Motorcycles* reveals these highly sought-after machines in gorgeous photography and full historical context.

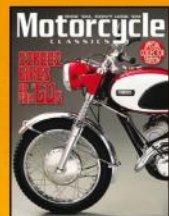
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Classic Motorcycles

Written by noted motorcycle author Patrick Hahn, *Classic Motorcycles* presents the history of motorcycling as told through the most significant, iconic, classic motorcycles of all time, with both period photography and modern portrait photography. You'll drool over the 1933 Matchless Silver Hawk, and you'll want to tear out the page displaying the 1956 Triumph Thunderbird and frame it. Prepare to be in awe of the undeniable classic motorcycles in this collection.

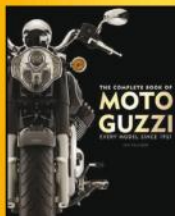
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The Complete Book of Moto Guzzi

The oldest European motorcycle manufacturer in continuous production, Italy's Moto Guzzi has built some of the most iconic motorcycles ever produced. Established in 1921, the company is one of the most traditional motorcycle makers and also one of the most innovative. For the first time ever, *The Complete Book of Moto Guzzi: Every Model Since 1921* collects all of these iconic motorcycles in encyclopedia form, written by widely respected Moto Guzzi expert Ian Falloon.

#8462 \$60.00



Vintage Dirt Bikes

Suddenly, everyone wants one of those old dirt bikes from back in the day: knobby tires, small two-cycle engines, four-speed transmission, and a full four inches of suspension travel. But which should a rider bring home? *Vintage Dirt Bikes* will help the reader make that decision by providing information on all the most popular makes. For each bike, this new book provides four to six paragraphs describing the bike in general terms.

#7524 \$27.95



Art of the Harley-Davidson Motorcycle

Art of the Harley-Davidson Motorcycle pulls together the best of David Blattel's Harley-Davidson portraiture—over 100 stunning machines—resulting in a breathtaking review of Harley-Davidson's greatest hits from the early 1900s to today. Harley-Davidson expert Dain Gingerelli puts each machine in historical and technical context with informed profiles.

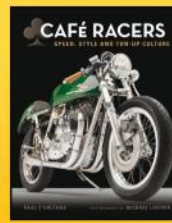
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The Kawasaki Z1 Story

In never before published interviews, with the men responsible for the bike code-named "New York Steak," Dave Sheehan relates the story behind the Z1's development, the secret U.S. testing program in which a team including Imola-race winner Paul Smart rode pre-production bikes disguised as Hondas coast-to-coast across America. This book examines the myth, truth and legend surrounding the Z1's first race win.

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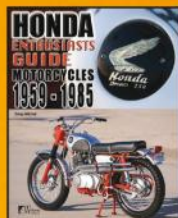
Café Racers: Speed, Style and Ton-Up Culture

The rebellious rock 'n' roll counterculture is what first inspired these bikes, with their owners often racing down public roads in excess of 100 miles per hour ("ton up," in British slang). Chronologically illustrated with fascinating historical photography, *Café Racers* travels through the eras of these nimble, lean, light, and head-turning machines. This stunning hardcover book features 224 pages filled with the story of these wonderful machines.

#7254 \$50.00

Great gifts for every motorcycle enthusiast

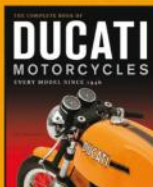
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Honda Motorcycles 1959-1985: Enthusiasts Guide

This book is designed to aid the non-professional motorcycle collector trying to decide whether to buy and restore Honda motorcycles produced between 1959 and 1985. For each model, author Doug Mitchel provides a detailed description of the bike, bullet points that highlights helpful information such as cost, value when finished, and more. The book also includes a section in the back that helps readers decide where to buy the bikes and parts, the best place to get them fixed and more.

#6973 \$27.95



The Complete Book of Ducati Motorcycles: Every Model Since 1946

The Complete Book of Ducati Motorcycles traces the stunning chronology of the motorcycles dreamed up by Ducati, from the 1940s to the present day. Laid out for the first time in the form of an encyclopedia, with gorgeous photography and insights from Ducati expert Ian Falloon, this book offers motorcycle enthusiasts a closer look at the craftsmanship, power, and beauty of these extraordinary motorcycles. The book features all of the motorcycles from Ducati's storied history, including the groundbreaking Desmodromic 750 Super Sport, the Mike Hailwood Replica, the Superbike-dominating 916, and the epic Panigale.

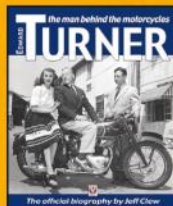
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How to Build a Café Racer

The book starts with chapters on planning and choosing an appropriate bike, followed by chapters that detail the modifications that will likely be embraced by anyone converting a stocker to a rocker. From shocks and tires to engine modifications, Doug Mitchel's book lays out each type of modification and how it's best carried through. The center of the book holds a gallery of finished bikes. The final chapters include two, start-to-finish Café builds.

#6684 \$27.95



Edward Turner: The Man Behind the Motorcycles

For the first time, the life of Edward Turner, one of Britain's most talented motorcycle designers, is revealed in full – making this much more than just another book about Triumph motorcycles. Although seen by many as an irascible man who ran a very tight ship, it is an inescapable fact that his was a highly profitable company.

#8247 \$35.95



Superbikes of the Seventies

Beautiful, powerful, exotic, brutal, and quick are just a few of the adjectives that these machines still conjure up ... and not just among those of us old enough to remember them. Roland Brown, one of the world's top motorcycle journalists, rides the best of these bikes and shares his impressions. He also describes each bike's technical features and provides complete specifications and road-test excerpts from when the bikes were new. Hundreds of color photographs and vintage 1970s sales brochures help recreate the excitement of encountering these bikes for the first time.

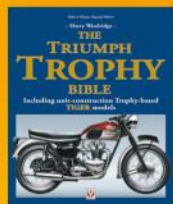
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The Women's Guide to Motorcycling

Author Lynda Lahman, herself a motorcycle owner and rider, provides a comprehensive look at motorcycling techniques, street smarts, and safety concerns while addressing female-specific challenges as well as issues that all bikers face from a female point of view. Lahman provides advice about choosing a bike, proper maintenance, types of riding, bike clubs, and more.

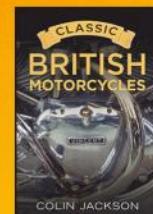
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The Triumph Trophy Bible

This is the complete year-by-year history of the Trophy (and unit construction Tiger) twins from 1949 to 1983. It includes original factory model photos, technical specifications, color schemes, engine and frame numbers, model type identification, and details of Trophy and Tiger achievements. As a longtime employee at Triumph's Meridian factory, Harry Woodridge shares his knowledge and expertise to provide the complete source book for Triumph Trophy owners and enthusiasts.

#8058 \$60.00



Classic British Motorcycles

In the modern era, mass-produced motorcycles tend to be Japanese or Italian, with the "big four" Asian manufacturers dominating the market. However, until the 1950s, and even into the '60s, British makers such as Norton and Vincent ruled the roost. These legendary companies, and many smaller British firms, are motorcycling's founding companies. Superbly illustrated with more than 150 color pictures, many previously unpublished, this book is a captivating and highly informative account of the men, machines, race meetings, and world events that shaped the development of the motorcycle from its bicycle origins.

#7758 \$32.00



The Build: How the Masters Design Custom Motorcycles

In *The Build*, Robert Hoekman Jr. compiles insights from today's best builders to help you plot out your own beautiful beast. This book is as much a 192-page motorcycle art book as it is a blueprint to building the perfect custom bike. The book is the bible of custom motorcycle design, starting with an explanation of all the different bike styles, and then moving into a concise, easy-to-read guide that takes you from finding a donor bike to figuring out how to alter the lines to your liking. The book also covers selecting and building parts, painting and finishing, and what kind of performance modifications might be appropriate.

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PARTING SHOTS



Group photo! Roberts with (left to right), crew chief Kel Carruthers, mechanics Trevor Tilbury and Nobby Clark, and racing manager Ken Clark.

compact and tidy twin-loop frames, making them appreciatively faster and better handling than Roberts' dated inline-four Yamaha. The following year Roberts finished fourth in the championship aboard his own square-four Yamaha, and in 1983 he and fellow American, Freddie Spencer, shared six wins apiece in their tussle for the crown; Spencer and his Honda NS500 won by the narrow margin of two points, while Roberts retired from GP racing for good at season's end.

During his three-year reign as 500cc world champion, Roberts earned the moniker King Kenny. It was for a good reason, as not only was he

unquestionably the most dominant rider in the premier 500cc field, he also commanded clout over the FIM (Federation Internationale Motocycliste, sanctioning body for Grand Prix racing) when he, along with fellow rider Virginio Ferrari, led a rider boycott in support of racers' rights at GP venues around the world. Roberts and Ferrari formulated a potential Grand Prix rider's strike, and by early 1980 voiced notions of forming a new race-sanctioning body entirely, to be called the World Series. In all, 36 notable riders supported the insurrection, prompting FIM officials to consider that perhaps King Kenny's empire did, indeed, stretch beyond the borders of his assigned pit area in the paddock. Soon enough the FIM guaranteed larger race purses, and instituted improved safety regulations that were imposed on race organizers.

Roberts' six-year foray into Europe also placed him at the vanguard of lucrative sponsorship deals for other racers and race teams. Within a couple of years his bikes sported huge PJ1 logos, and soon enough Marlboro (a Phillips Morris tobacco brand) signed on with Yamaha. Other tobacco companies and major sponsors followed, and Grand Prix road racing has never been the same since.

And it all started one quiet afternoon at a hotel conference room in Anaheim, California, where a farm boy from Modesto, California, began his quest to be king of the world championship. Long live the King! — *Dain Gingerelli*

King of the World

The world of Grand Prix motorcycle road racing gently shifted on its axis in March 1978. That's when Yamaha Motor Corporation, U.S.A., publicly announced the formation of a one-rider team that would challenge three world championships in the coming months. The press release's second sentence said it all:

"Riding after the world crown will be 26-year-old Kenny Roberts. The U.S. road racing champ will contest the 250 and 500 Gran (sic) Prix World Championship Series and the Formula 750 races. His schedule will include a 26-race tour of the U.S., Canada, South America and Europe."

The rest, as they say, is history. We all know that KR failed in his bid to become 250 and F750 world champ that year, but he succeeded beyond everybody's wildest dreams to win the 500cc class (now MotoGP) in 1978. Moreover, his riding style and competitive spirit earned him the respect of the European moto-press corps, fans and racers alike. Roberts' reign lasted two more years before Italian rider Marco Lucchinelli dethroned him in 1981. Lucchinelli led a small squadron of Suzuki-mounted riders, all on RG500 Gammas, to relegate Roberts to third in points. The Suzukis were powered by square-four engines wedged into



Original press release photo showing Kenny Roberts testing the Yamaha OW35 inline-four at Riverside Raceway prior to the 1978 GP season.

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